

Developing a locally embedded curriculum for IT-driven agri-food business

Dr. ir. Ayalew Kassahun, assistant professor at the Information Technology group of the Social Sciences Department of Wageningen University and IOM's CD4D goodwill ambassador

Zoom Conference on **14 July 2022** in frame of the African-Bavarian Alliance for Applied Life Sciences

08:00 – 09:30 / Dakar

09:00 – 10:30 / Tunis

10:00 – 11:30 / Berlin & Pretoria

11:00 – 12:30 / Addis Ababa



Meeting Agenda

Time	Agenda Item
08:00 – 08:15 (Dakar) 09:00 – 09:15 (Tunis) 10:00 – 10:15 (Berlin & Pretoria) 11:00 – 11:15 (Addis Ababa)	Introduction
08:15 – 08:40 (Dakar) 09:15 – 09:40 (Tunis) 10:15 – 10:40 (Berlin & Pretoria) 11:15 – 11:40 (Addis Ababa)	Why develop a locally embedded curriculum? Investigating research and development work done in focus areas of Wollo University
08:40 – 08:50 (Dakar) 09:40 – 09:50 (Tunis) 10:40 – 10:50 (Berlin & Pretoria) 11:40 – 11:50 (Addis Ababa)	Q/A and break
08:50 – 09:15 (Dakar) 09:50 – 10:15 (Tunis) 10:50 – 11:15 (Berlin & Pretoria) 11:50 – 12:15 (Addis Ababa)	Developing a locally embedded curriculum for IT-driven agri-food business development: the case of the EUDiF project for Wollo University
09:15 – 09:30 (Dakar) 10:15 – 10:30 (Tunis) 11:15 – 11:30 (Berlin & Pretoria) 12:15 – 12:30 (Addis Ababa)	Q/A and closing

Outline

1. About local area and motivation
 - a. Dessie, Wollo, and the local surrounding
 - b. Why local embeddedness
 - c. Why entrepreneurship
2. The results of a systematic literature review on Wollo
 - a. How the review was done
 - b. What did the literature review revealed
3. The implication of the research results
 - a. A new project sponsored by EUDiF
 - b. Link of research and curricula / curriculum enhancement
 - c. IT-driven, locally embedded, entrepreneurship focused agri-food business



Image © 2022 CNES / Airbus
Image Landsat / Copernicus
Image © 2022 Maxar Technologies

Google Earth Pro

Imagery Date: 2/24/2021 11°07'18.58" N 39°40'13.95" E elev 2251 m eye alt 13.83 km



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Benedeneind

De Klomp

Lunteren

Ede

Nieuw-Reerst

Oud-

De Kraats

Nergena

Hoekelum

Bennekom

De Peppeld

Wageningen-Hoog

Leeuwen

Renkum

Heelsum

Wageningen

Nude

Havenkanaal

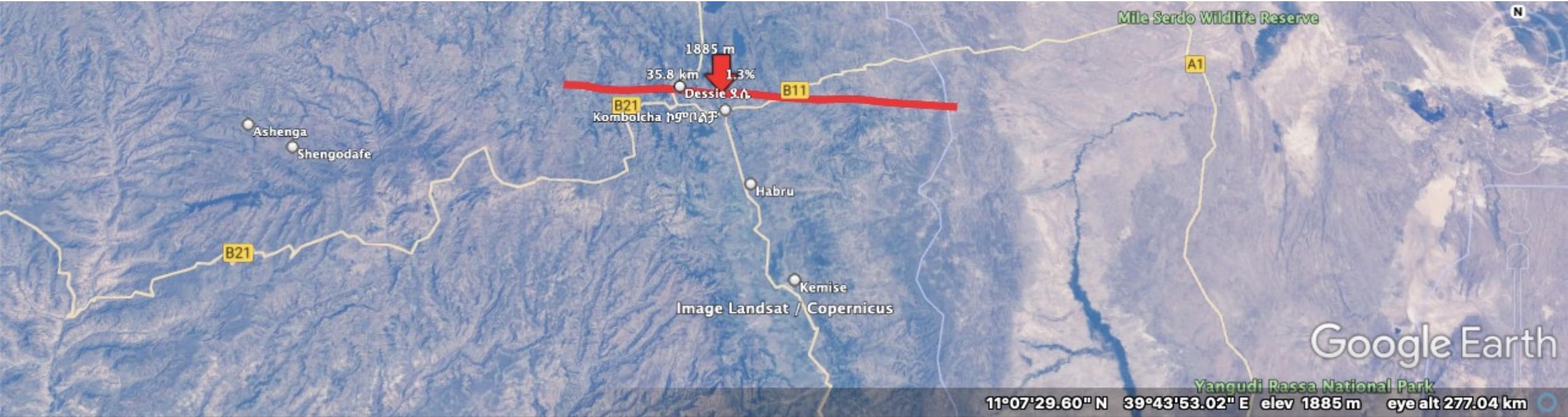
De Strang

Nederrijn

Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Randwijk

Google Earth



11°07'29.60" N 39°43'53.02" E elev 1885 m eye alt 277.04 km

Graph: Min, Avg, Max Elevation: 957, 1919, 3226 m

Range Totals: Distance: 90.1 km Elev Gain/Loss: 5725 m, -7624 m Max Slope: 49.4%, -54.9% Avg Slope: 12.9%, -11.8%









July, 2022

Ayalew Kassahun



July, 2022

Ayalew Kassahun

11



ANRS POLICE COMMISSION
SOUTH WOLLO ADM ZONE POLICE
HEAD OFFICE

PRITEL



What does mainstream media say about Wollo?

Wollo Dessie

Q All Maps Images Videos News More Tools

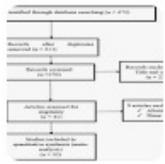
Past month Sorted by relevance Clear

n Nature

Pre-marital sex and its association with peer pressure and ...

Department of Reproductive and Family Health, School of Public Health, College of Medicine and Health Sciences, Wollo University, Dessie, Ethiopia.

3 weeks ago



b Borkena

Dessie: five people killed in grenade attack in a police station

However, they were captured around 4:00 P.M. with a joint operation from South Wollo Police and Dessie City Administration and later taken to the fourth...

3 weeks ago



AS Addis Standard

News: Suspects in murder investigation launch grenade attack ...

According to the statement, in a joint operation by South Wollo Police and Dessie City Administration, the attacks were averted and the suspects were...



Wollo Ethiopia Food -Grenade -marital -Humanitarian

Q All Maps Images Videos News More Tools

Past year Sorted by relevance Clear

BMC Women's Health

Differential effect of prenatal exposure to the Great Ethiopian ...

A historical cohort study was conducted in Raya Kobo District, Wollo, Ethiopia, to investigate the effect of early life famine exposure on risk of...

3 weeks ago

DN Dutch News

The people exporting Dutch expertise back to their home ...

'In Ethiopia, the majority of graduates don't get jobs in whatever discipline ... Kassahun began by using his connections with the Dutch agri-food sector to...

14 Feb 2022



AS Addis Standard

#ASDailyScoop: Over 30,000 people living in makeshift ...

Addis Abeba – The residents of Meket Woreda in the North Wollo zone of the Amhara region are living in makeshift homes, reports said.





July, 2022

Searching scientific databases



Dessie OR Dese
 OR Kombolcha OR
 Combolcha OR
 Bati OR Kobo OR
 Wera* OR Were
 OR Maychew OR
 Sekota OR
 Borena AND
 Amhara OR Mersa
 OR Ambassel OR
 Mekdela OR
 Woldiya OR
 Kemise OR
 Sayint OR Kobo
 OR Lasta OR
 Lalibela OR ...

Institute of Electrical
 and Electronics
 Engineers

Database	Date	Investigator	# Papers
Scopus	May 2021	P1 & P2	4642
Web of Science	May 2021	P1 & P2	4496
CAB abstracts	May 2021	P1 & P2	3321
PubMed	May 2021	P1 & P2	2839
IEEE	May 2021	P1 & P2	35
Wiley	May 2021	P1 & P2	1940
Total			17273



```
df_all.groupby('database').size()
```

```
database
CAB      3321
IEEE      35
PubMed   2839
Scopus   4642
Wiley    1940
WoS     4496
dtype: int64
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[ ] df_all = df_all.reset_index(drop=True)
    df_all.tail()
```

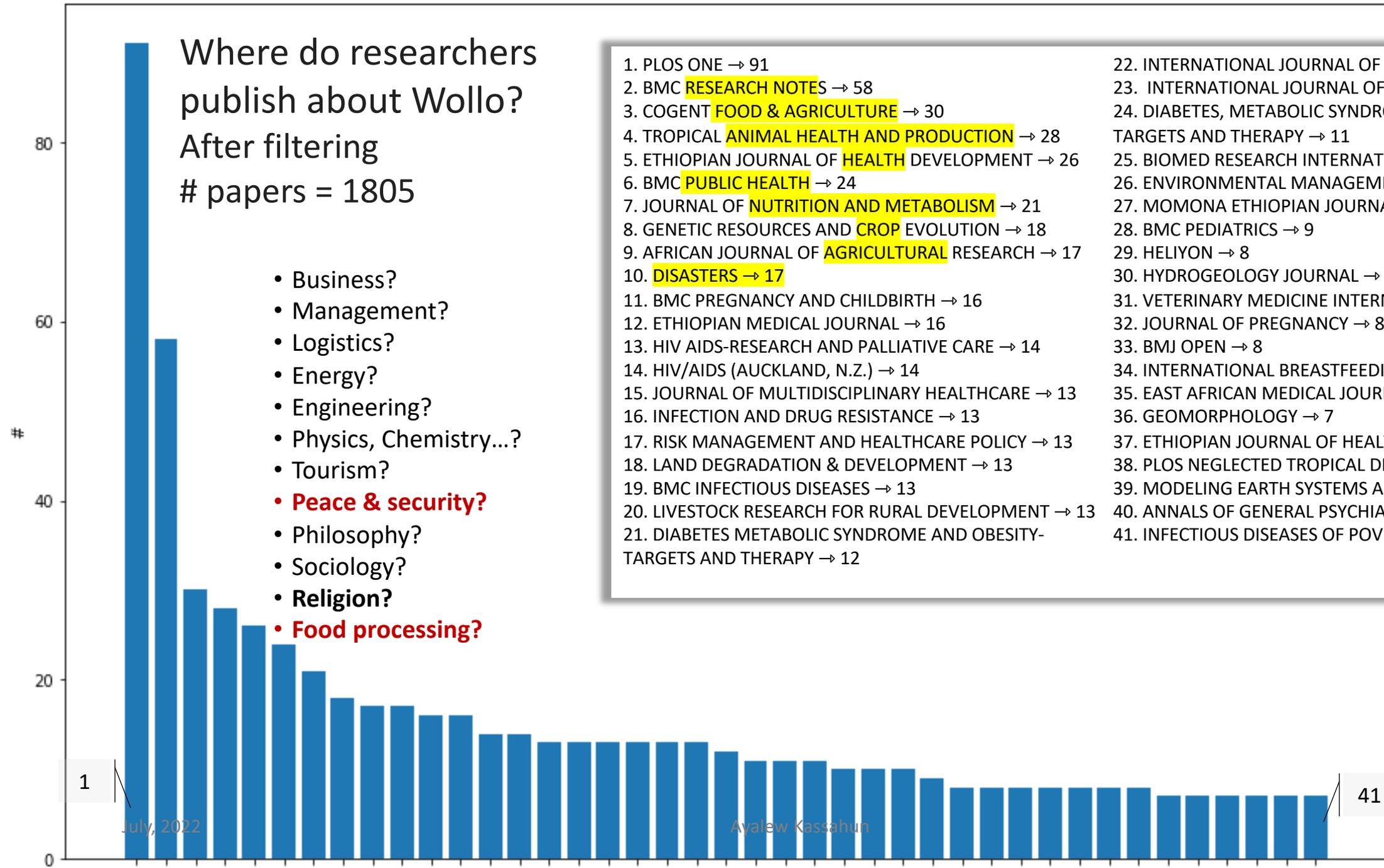
	title	abstract	author_keywords	authors	year	source	DOI	refs	database
17268	Famine and survival strategies: a case study f...	The province of Wollo in northeast Ethiopia ha...	None	Rahmato, D.	1991	Famine and survival strategies: a case study f...	None	None	CAB
17269	An economic analysis of cooperative farming in...	The study (1) investigates the economic viabil...	None	Assefa, T.	1989	An economic analysis of cooperative farming in...	None	None	CAB
17270	An evaluation of Band Aid funded agricultural ...	In 1986 Band Aid donated a total of #2 million...	None	Cutler, P.\n\nMitchell, J.	1987	An evaluation of Band Aid funded agricultural ...	None	None	CAB
17271	The application of farming systems research to...	The primary objective of this study was to dev...	None	Poschen-Eiche, P.	1987	The application of farming systems research to...	None	None	CAB
17272	Basic needs and services in rural Ethiopia: ca...	The three Woredas (districts) of Gardula, Kers...	None	Tesfaye, A.\n\nSelassie, S. G.\n\nBishaw, M.	1982	Basic needs and services in rural Ethiopia: ca...	None	None	CAB

Where do researchers publish about Wollo? After filtering # papers = 1805

- Business?
- Management?
- Logistics?
- Energy?
- Engineering?
- Physics, Chemistry...?
- Tourism?
- **Peace & security?**
- Philosophy?
- Sociology?
- **Religion?**
- **Food processing?**

1. PLOS ONE → 91
2. BMC RESEARCH NOTES → 58
3. COGENT FOOD & AGRICULTURE → 30
4. TROPICAL ANIMAL HEALTH AND PRODUCTION → 28
5. ETHIOPIAN JOURNAL OF HEALTH DEVELOPMENT → 26
6. BMC PUBLIC HEALTH → 24
7. JOURNAL OF NUTRITION AND METABOLISM → 21
8. GENETIC RESOURCES AND CROP EVOLUTION → 18
9. AFRICAN JOURNAL OF AGRICULTURAL RESEARCH → 17
10. DISASTERS → 17
11. BMC PREGNANCY AND CHILDBIRTH → 16
12. ETHIOPIAN MEDICAL JOURNAL → 16
13. HIV AIDS-RESEARCH AND PALLIATIVE CARE → 14
14. HIV/AIDS (AUCKLAND, N.Z.) → 14
15. JOURNAL OF MULTIDISCIPLINARY HEALTHCARE → 13
16. INFECTION AND DRUG RESISTANCE → 13
17. RISK MANAGEMENT AND HEALTHCARE POLICY → 13
18. LAND DEGRADATION & DEVELOPMENT → 13
19. BMC INFECTIOUS DISEASES → 13
20. LIVESTOCK RESEARCH FOR RURAL DEVELOPMENT → 13
21. DIABETES METABOLIC SYNDROME AND OBESITY-TARGETS AND THERAPY → 12

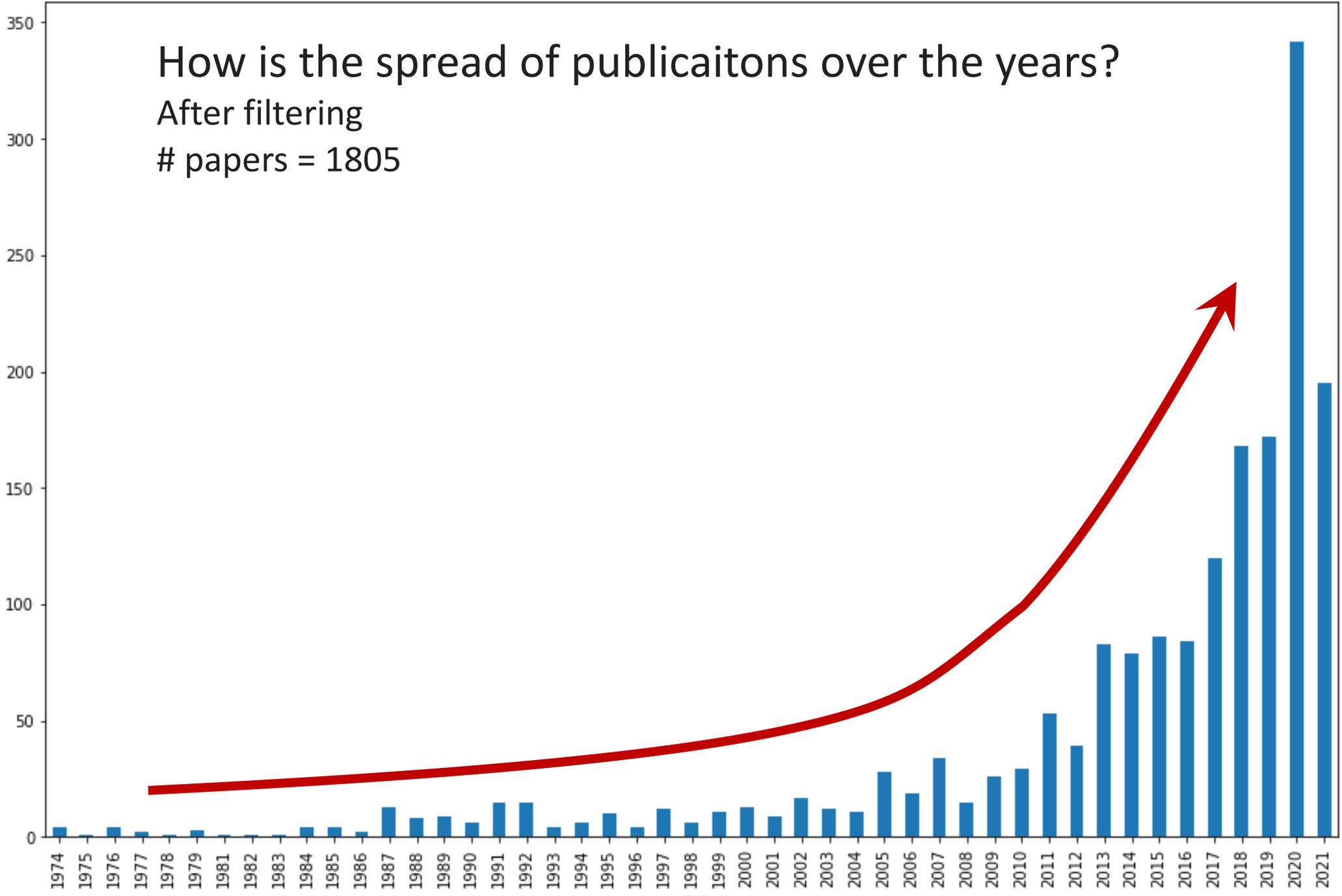
22. INTERNATIONAL JOURNAL OF MICROBIOLOGY → 11
23. INTERNATIONAL JOURNAL OF PEDIATRICS → 11
24. DIABETES, METABOLIC SYNDROME AND OBESITY : TARGETS AND THERAPY → 11
25. BIOMED RESEARCH INTERNATIONAL → 10
26. ENVIRONMENTAL MANAGEMENT → 10
27. MOMONA ETHIOPIAN JOURNAL OF SCIENCE → 10
28. BMC PEDIATRICS → 9
29. HELIYON → 8
30. HYDROGEOLOGY JOURNAL → 8
31. VETERINARY MEDICINE INTERNATIONAL → 8
32. JOURNAL OF PREGNANCY → 8
33. BMJ OPEN → 8
34. INTERNATIONAL BREASTFEEDING JOURNAL → 8
35. EAST AFRICAN MEDICAL JOURNAL → 8
36. GEOMORPHOLOGY → 7
37. ETHIOPIAN JOURNAL OF HEALTH SCIENCES → 7
38. PLOS NEGLECTED TROPICAL DISEASES → 7
39. MODELING EARTH SYSTEMS AND ENVIRONMENT → 7
40. ANNALS OF GENERAL PSYCHIATRY → 7
41. INFECTIOUS DISEASES OF POVERTY → 7



How is the spread of publications over the years?

After filtering

papers = 1805





SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

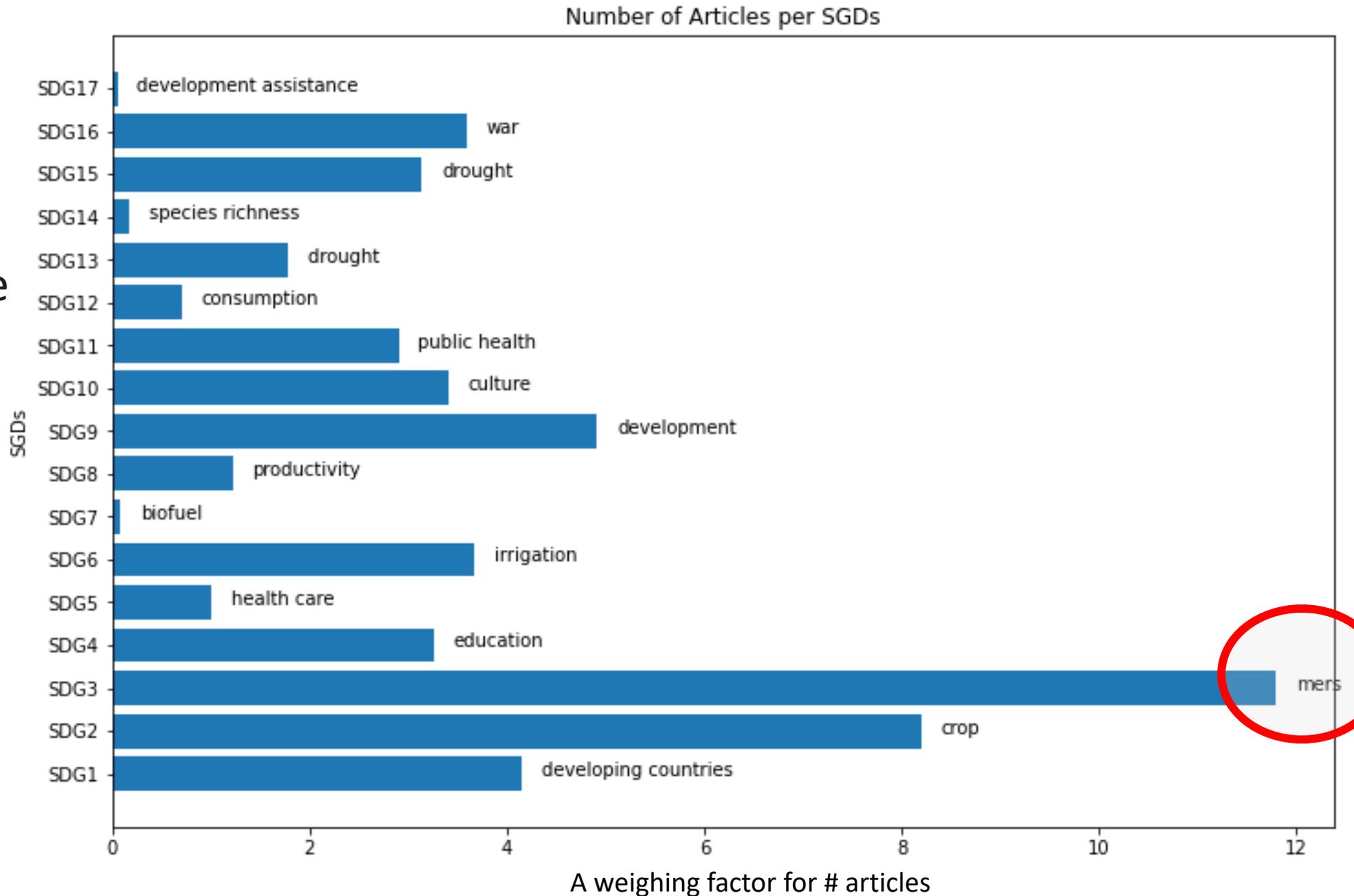
15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

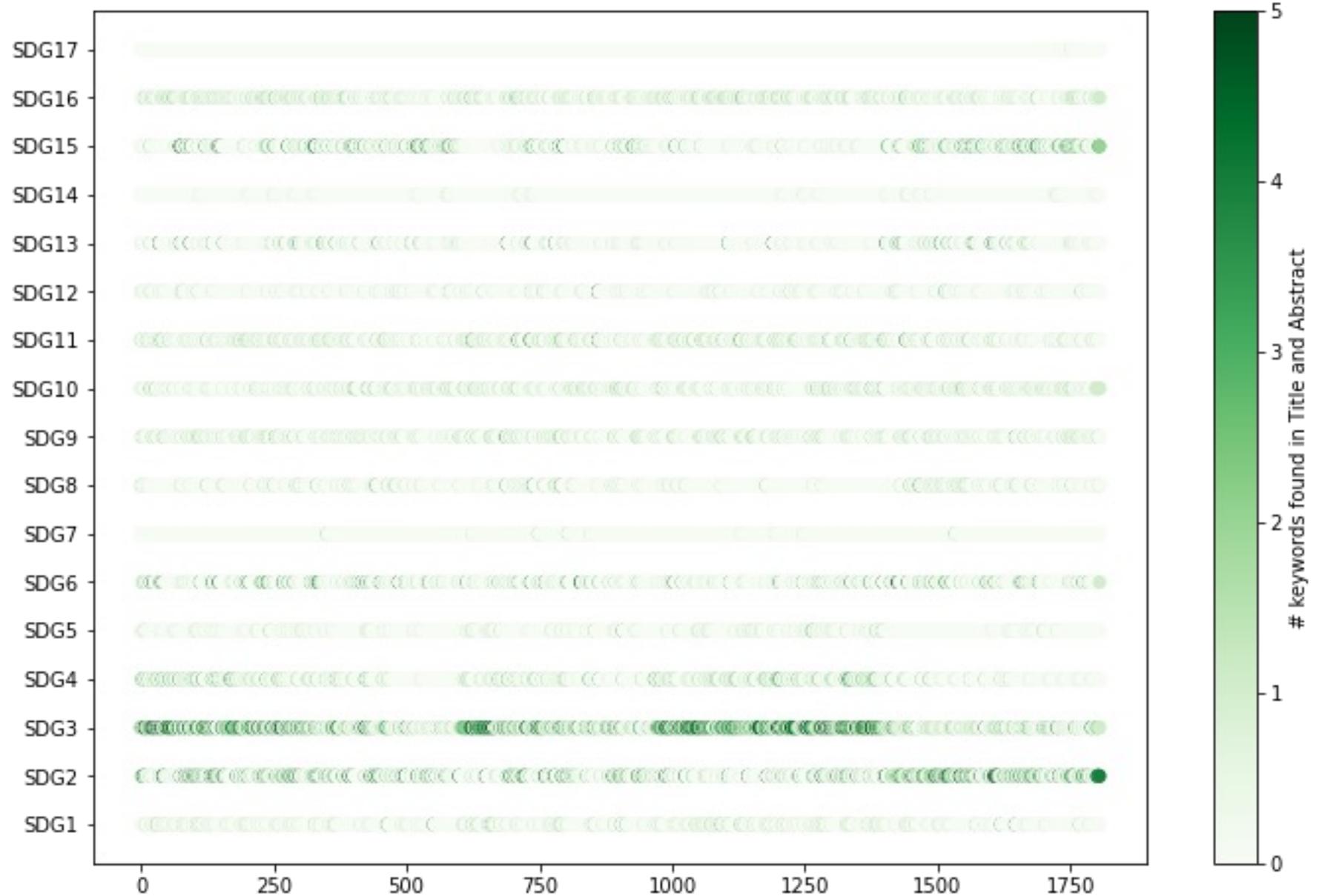
17 PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS

Which SDGs are researchers focussing on when researching about Wollo?
papers = 1805



Which SDGs are
researchers
focussing on
when
researching
about Wollo?
papers = 1805



This led us to conclude that...

- SDG7 (energy), SDG5 (gender equality), SDG8 (decent work), SDG12 (consumption & production), SDG14 (life under water), SDG17 (partnership for the goals) got insufficient focus. This means engineering, business, commerce, management, energy need to attract the attention of the research community.
- Wollo area needs relevant research; researchers need to prioritize the research focus on the needs of the area. Research excellence is a major issue that must be addressed.
- Research must shape and guide curricula of universities. The curricula must support excellent, relevant, and useful research that can be applied in practice. Trainers need to focus on the right SDGs, they need to develop locally embedded, jobs/entrepreneurship-oriented curricula.
- IT-drive agri-food business development is aimed at filling this gap. According to our findings, our curriculum fills only part of the larger gap that exists.
- Wollo University is establishing a Technology Incubation and Entrepreneurial Readiness (TIER) centre; it is an innovation centre to which our curriculum will contribute.

Q&A

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Outline

1. EUDiF program
2. Project idea for the agri-food business course
3. Curriculum
 - a. Modern Agri-Food Business Development
 - b. Basic programming
 - c. Bigdata and Environmental Modelling
4. Infrastructure
 - a. Learning management system (LMS)
 - b. Roadmap for incorporating into the regular curriculum

EUDiF program

the call for
applications

Sectors	Possible sub-sectors
Digitalisation	<ul style="list-style-type: none">- E-health- Distance learning- E-business- E-governance- Information management- Digital finance
Health	<ul style="list-style-type: none">- Development of healthcare services and training- Health systems policy formulation- Preparedness for emergency health crisis
Education	<ul style="list-style-type: none">- Creation of curriculum- Support to research project- Teaching higher education courses- Technical and vocational training
Environment & climate change	<ul style="list-style-type: none">- Green initiatives- Climate change mitigation and adaptation- Diaspora humanitarianism
Entrepreneurship	<ul style="list-style-type: none">- Small and medium enterprises creation- New technologies- Youth entrepreneurs- Women entrepreneurs- Diaspora / heritage tourism



Piloting digital learning on agri-food business and environmental informatics in Ethiopia

**EUDiF
program**

**approved
project**

ACTION BASICS

<p>Beneficiary institution</p>	 <p>Wollo University (WU) is a federal university founded in 2005 to extend access to quality higher education in Ethiopia. Through regular, extension, distance and continuing education, they train students to become competent professionals who can contribute to the socio-economic development of Ethiopia.</p>
<p>Diaspora professionals</p>	<p>A total of five diaspora professionals will be recruited to support this action:</p> <ul style="list-style-type: none"> • Dr. Ayalew Kassahun is an assistant professor at the IT Group of Wageningen University and specialises in supply chain management systems and integration. • Dr. Beshir Ali is a post-doctoral researcher at the Business Economics Group of Wageningen University, where he also holds a Ph.D. in Applied Economics and a Master in Organic Agriculture. • Dr. Seleshi Getahun Yalew is a post-doctoral researcher at the Delft University of Technology in the Netherlands, where he also holds a Ph.D. in Integrated Assessment of Land and Water Resources. • Dr. Seid Muhie Yinam is a post-doctoral researcher at the LT Group in Universität Hamburg, Germany. He holds a Ph.D. in Computer Science with his thesis in Adaptive Approaches to Natural Language Processing in Annotation and Application an active research sub-topic of Artificial Intelligence (AI). • Dr. Yonas Seifu Muanenda is an assistant professor in Emerging Digital Technologies at the Suoula Superiore Sant'Anna in Pisa, Italy.
<p>Duration</p>	<p>12 months</p>
<p>Sustainable Development Goals</p>	   



Digitalisation



Education



Entrepreneurship



Environment



Health

Types of diaspora expertise



Conduct of assessments, research and/or evaluations

- **Assessment of the current agri-business curriculum of WU** to determine areas for update and improvement
- **Assessment of the available infrastructure and resources in WU** to develop and host an LMS
- **Evaluation of the content of the new online courses and the newly-installed LMS** by WU academic staff and students for further refinement and customisation



Organisation of knowledge transfer events

- **Training of WU's IT personnel** about the technical components of the new LMS, including its installation and maintenance
- **Training of WU academic staff** about effective online course delivery and the usage of the new LMS
- **Consultative workshop with key local and national stakeholders** to communicate the results of the pilot testing of online learning in WU, as well as to discuss the benefits of online learning in Ethiopia



Development of strategic documents and/or training tools

- **Development of three online courses** about (1) modern agri-food business value chains, (2) programming in agriculture and environment and (3) big data analytics for agricultural and environmental management
- **Installation and configuration of the new LMS** (based in Moodle)
- **Pilot testing of the newly developed online courses** with WU students to determine the relevance of the content and the effectiveness of assessment methodology
- **Development of a roadmap** to include the newly-developed online courses into WU's regular curriculum

Modern Agri-Food Business



Learning Objectives

1. This course trains the participants on how to make business plans for modern agri-food (related) businesses that are needed in their locality.
2. The participants will learn about the elements of managing a modern agri-food business: agri-food sectors, value chains, business strategies, business ecosystems, business models, information management, budgeting, risk assessment, business processes, and digital (farm) technologies
3. The course aims to teach the participants on how to collaborate within a multidisciplinary team and work towards a business plan for a real or realistic agri-food (related) business
4. The students will learn how to position their business idea in a modern agri-food business ecosystem and learn the need for nurturing an effective agri-food business ecosystem



Kutaber



Boru & Alansha

T'igaja

Barumiedà

Sulula

Dessie
Dessie

Tita



Gerado

July, 2022



Tita

Image © 2020 CNES / Airbus
© 2019 Google
Image © 2020 Maxar Technologies

Ayalew Kassahun



(Dec. 2020, courtesy of Abdulkerim Mohammed Aman, Project Manager of Awash
- Kombolcha- Hara Gebeya Railway project)



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KOMBOLCHA INDUSTRIAL PARK Quick Facts



Location

- North-central Ethiopia. Located in the South Wollo Zone of the Amhara Regional State
- KIP is located next to Kombolcha Airport



Population and Employment

- 1.5 million people live within 50 km radius of Kombolcha
- In two shifts, it can create employment for up to 20,000 employees



Industrial Park Area

- Land area of 750,000 m² (Phase-I)
- Factory shed built up area of 60,500 m²



Industrial Park Facilities

- Health center
- Police station
- One Stop Service
- Commercial building
- Fire brigade & 24x7 security services
- Waste treatment facilities (STP & ETP)



Park Specialization

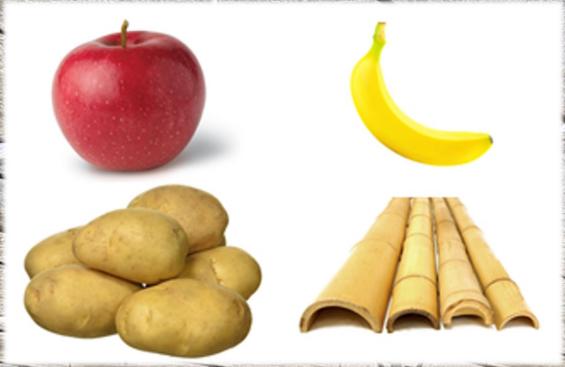
- Designed to host investors in the textile and apparel sector



Key Principles of the Park

- Specialized park
- Sustainability (environmental and social)

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Tissue Culture Main Laboratory

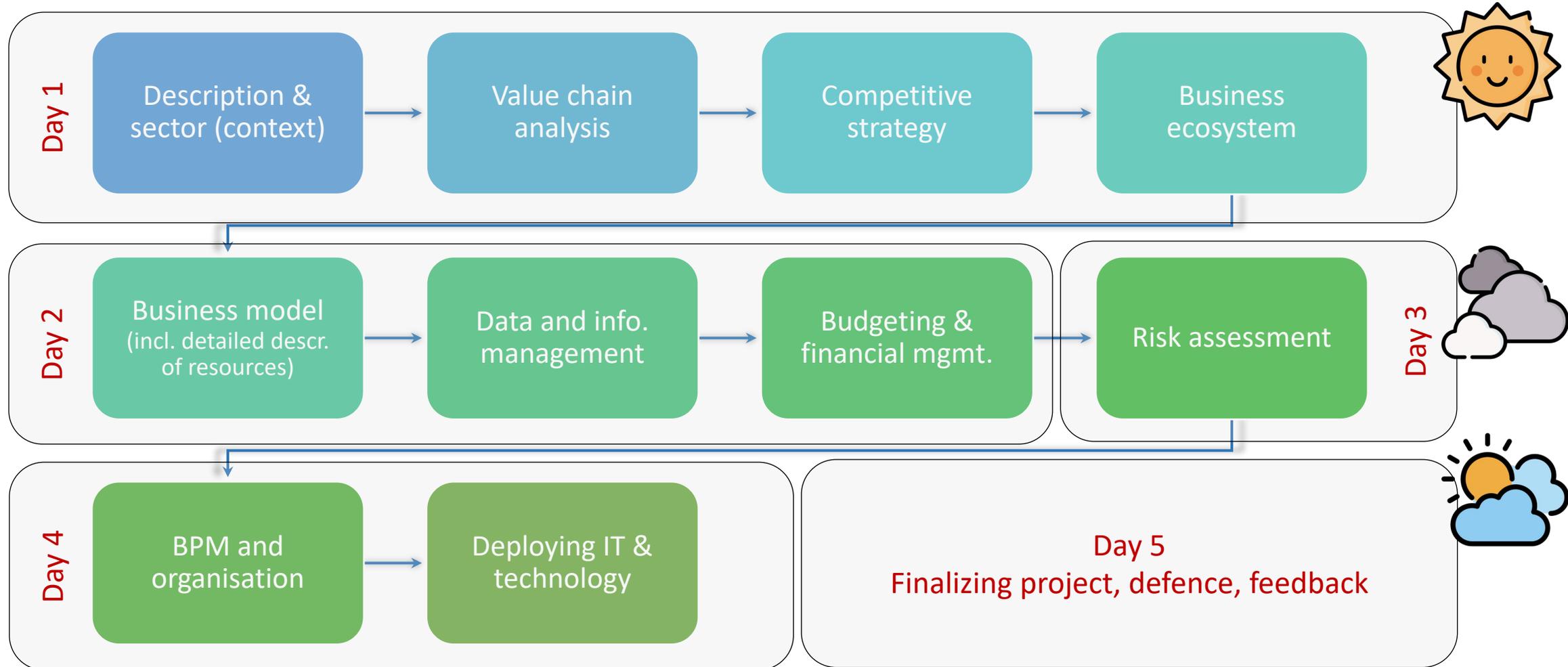




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Capstone project (business plan) & schedule





Day 1: Agri-food value chains, competition and collaboration

Module	Duration	Learning activities and assessment method
1	1 hr	Lecture and team forming: Agri-food business ideas
2	2 hrs	Lecture and discussions: Agri-food sectors and value chains 
3	2 hrs	Lecture and discussions: Porter's models of business strategies and competition. Collaboration, open innovation, and business ecosystems
Quiz and assignment	2 hrs	Classroom assignment and exercises. Apply the theory that is practiced during the exercises to own capstone business base. 
Delivery methods		Lecture Teams work on a capstone project business plan  

Example: agri-food products in Boru-Alansha

Crop seasonality in Boru-Alanash area (# Farmers)

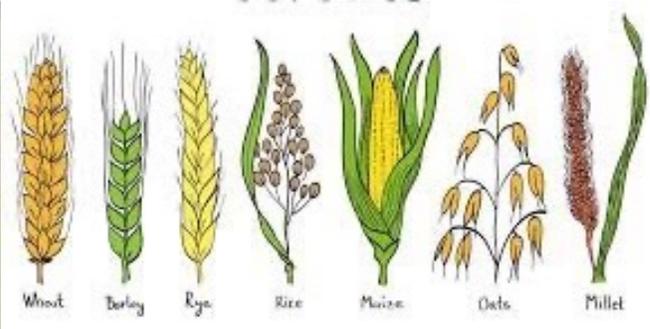
Season	Crop	Boru Meda	Alasha	Gerado	Agala	Hitacha	Amumo	Bishaniko
Belg	Belg Barley	15	15	10	0	1	0	0
	Bean	1	0	0	0	2	4	4
	Chickpea	0	0	0	4	5	10	14
	Lentil	0	0	0	0	0	1	0
	Maize	11	15	7	9	0	0	0
	Oat	1	0	1	0	0	2	3
	Potato	0	2	1	0	0	0	0
	Teff	0	0	0	2	14	12	14
	Vetch	0	0	0	6	8	11	16
	Wheat	8	4	15	2	15	16	13
Meher	Barley	0	0	0	3	0	1	0
	Beans	8	1	5	9	2	2	0
	Chickpea	0	0	0	3	0	3	2
	Lentil	2	0	0	1	3	0	0
	Maize	0	0	2	0	3	4	0
	Oat	0	0	0	5	0	0	1
	Pea	7	1	0	0	1	0	0
	Sorghum	0	0	2	0	4	2	7
	Teff	0	0	13	15	20	18	20
	Vetch	0	0	0	3	1	8	3
Wheat	0	0	6	15	16	13	13	



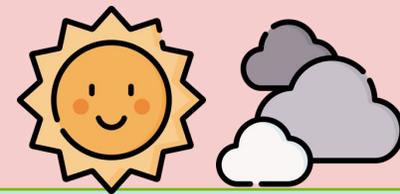
Example: agri-food products in Boru-Alansha

Crops Grown by Season in Highland and Mid/Lowland Areas

	Belg Season		Meher Season	
	Crop	Number of Farmers	Crop	Number of Farmers
Highland (2500-2700 Meters Above Sea Level)	Maize	42	Teff	28
	Barley	35	Beans	23
	Wheat	29	Wheat	21
	Vetch	6	Pea	8
	Chickpea	4	Oat	5
	Potato	3	Barley	3
	Oat	2	Lentil	3
	Teff	2	Vetch	3
	Bean	1	Chickpea	3
			Maize	2
		Sorghum	2	
Lowland (1900 Meters Above Sea Level)	Wheat	40	Teff	58
	Teff	40	Wheat	42
	Vetch	35	Sorghum	13
	Chickpea	29	Vetch	12
	Bean	10	Maize	9
	Oat	5	Chickpea	5
	Barley	1	Bean	4
	Lentil	1	Lentil	3
	Maize	1	Oat	1
			Pea	1
		Barley	1	

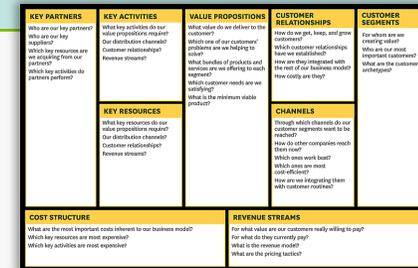


Cafer, Anne M., "A Survey of Agricultural Productivity and Nutritional Status in Rural South Wollo, Ethiopia" (2011). Anthropology Department Theses and Dissertations. 15.



Day 2: Data and Business Models

Module	Duration	Learning activities and assessment method
4	1 hr	Lecture and discussions: <ul style="list-style-type: none"> business model canvas lean canvas
5	2 hrs	Lecture and discussions: Data governance and models data management systems
	2 hrs	Lecture and discussions: Farm enterprise budgeting, whole-farm/business planning
Quiz and assignment	2 hrs	Classroom assignment and exercises. Apply the theory that is practiced during the exercises to own capstone business base
Delivery methods July, 2022		Lecture Teams work on capstone project



Key Partners



Who are our Key Partners?
 Who are our key suppliers?
 Which Key Resources are we acquiring from partners?
 Which Key Activities do partners perform?

MOTIVATIONS FOR PARTNERSHIPS
 Optimization and economy
 Reduction of risk and uncertainty
 Acquisition of particular resources and activities

Key Activities



What Key Activities do our Value Propositions require?
 Our Distribution Channels?
 Customer Relationships?
 Revenue streams?

CATEGORIES
 Production
 Problem Solving
 Platform/Network

Value Propositions



What value do we deliver to the customer?
 Which one of our customer's problems are we helping to solve?
 What bundles of products and services are we offering to each Customer Segment?
 Which customer needs are we satisfying?

CHARACTERISTICS
 Newness
 Performance
 Customization
 "Getting the Job Done"
 Design
 Brand/Status
 Price
 Cost Reduction
 Risk Reduction
 Accessibility
 Convenience/Usability

Customer Relationships



What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
 Which ones have we established?
 How are they integrated with the rest of our business model?
 How costly are they?

EXAMPLES
 Personal assistance
 Dedicated Personal Assistance
 Self-Service
 Automated Services
 Communities
 Co-creation

Customer Segments



For whom are we creating value?
 Who are our most important customers?

Mass Market
 Niche Market
 Segmented
 Diversified
 Multi-sided Platform

Key Resources



What Key Resources do our Value Propositions require?
 Our Distribution Channels? Customer Relationships?
 Revenue Streams?

TYPES OF RESOURCES
 Physical
 Intellectual (brand patents, copyrights, data)
 Human
 Financial

Channels



Through which Channels do our Customer Segments want to be reached?
 How are we reaching them now?

Item	Unit	Quantity	Price	Amount
Revenue				
Corn grain	kg	3000	\$0.16	\$480.00
Total revenue				\$480.00
Operating expenses				
Seed	thousands	26	\$1.95	\$50.70
Tech fees	acre	1	20	20.00
Fertilizer: Nitrogen	kg	75.818	1.32	100.20
Phosphorous	kg	27.24	1.254	34.20
Potash	kg	27.24	1.364	37.20
Lime (proctored)	tons	0.33	28	9.24
Pesticides	acre	1	38	38.00
Machinery variable costs	acre	1	24.93	24.93
Labor	hr	1.6	10	16.00
Hauling	kg	3000	0.01	30.00
Crop insurance	acre	1	25	25.00
Interest (operating expenses for 6 months)	\$	\$192.74	6.50%	12.53
Total operating expense				398.00
Income above variable costs				82.00
Ownership expenses				
Machinery depreciation	acre	1	11	11.00
Machinery interest	acre	1	10.5	10.50
Machinery taxes & insurance	acre	1	2.5	2.50
Land charge	acre	1	50	50.00
Misc. overhead	acre	1	4	4.00
Total ownership expenses				78.00
Total expense				476.00
Profit (return to management)				\$4.00

Enterprise Budget for Corn (1 acre)

Revenue Streams

For what value are our customers really willing to pay?
 For what do they currently pay?
 How are they currently paying?
 How would they prefer to pay?
 How much does each Revenue Stream contribute to our business?

TYPES
 Asset sale
 Usage fee
 Subscription Fees
 Lending/Renting/Leasing
 Licensing
 Brokerage fees
 Advertising

FIXED PRICING
 List Price
 Product feature dependent
 Customer segment dependent
 Volume dependent

Cost Structure

What are the most important costs inherent in our business model?
 Which Key Resources are most expensive?
 Which Key Activities are most expensive?

IS YOUR BUSINESS MORE
 Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing)
 Value Driven (focused on value creation, premium value proposition)

SAMPLE CHARACTERISTICS
 Fixed Costs (salaries, rents, utilities)
 Variable costs
 Economies of scale
 Economies of scope



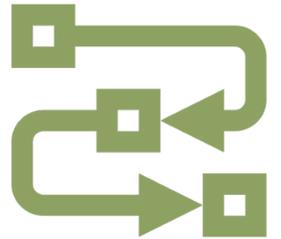
Day 3: Risk assessment

Module	Duration	Learning activities and assessment method
6	3 hrs	Lecture and discussions: <ul style="list-style-type: none">• sources of farm risks• decision making under uncertainty• risk management tools 
7	2 hrs.	Lecture and discussions: <ul style="list-style-type: none">• sources of supply chain risks• role of network design in mitigating risk• risk management tools 
Quiz and assignment	2 hrs	Classroom assignment and exercises. Apply the theory that is practiced during the exercises to own capstone business base 
Delivery methods		Lecture Teams work on capstone project  



Day 4: Business processes, organisation structure and IT

Module	Duration	Learning activities and assessment method
8	3 hrs	Lecture and discussions: <ul style="list-style-type: none"> • business processes, BPMN, DACUM • organisational structure, duties and tasks
9	2 hrs.	Lecture and discussions: <ul style="list-style-type: none"> • web presence, MIS, FMIS • systems for coops, business ecosystems • ERP, IoT, BI, KM
Quiz and assignment	2 hrs	Classroom assignment and exercises. Apply the theory practiced during exercises to own capstone business base
Delivery methods July, 2022		Lecture Teams work on capstone project





<https://www.nvwa.nl/documenten>

Money in

- Income
- Payments
- Invoicing
- Prediction
- Bank accounts
- Funds

Money out

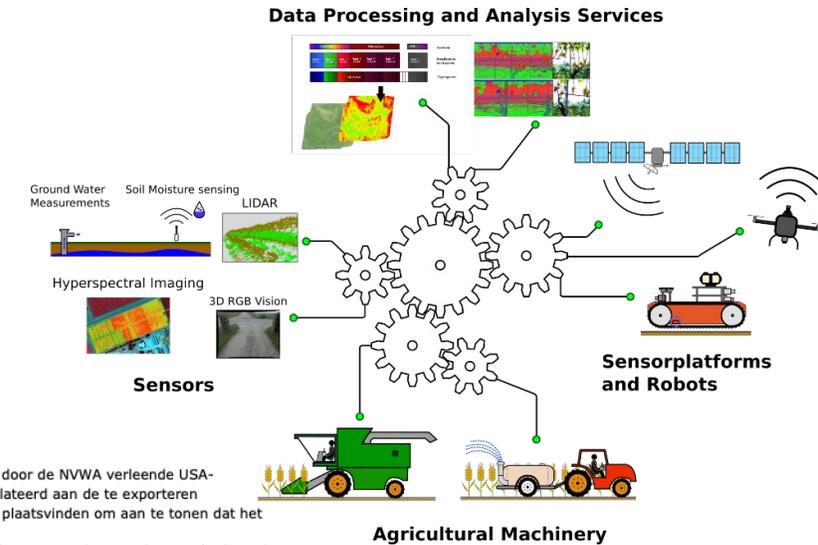
- Bills
- Expenses
- Sales tax

People & assets

- Task schedule
- Record time
- Payroll
- Contractors
- Other HRM tasks

Report

- Cash flow
- Profit & loss
- Track reports
- Tagging transactions



<https://digital-strategy.ec.europa.eu/>

WERKWIJZE

Om te kunnen exporteren naar de VS moeten de bedrijven een door de NVWA verleende USA-exportregistratie hebben. De type USA-exportregistratie is gerelateerd aan de te exporteren productsoort. Jaarlijks moet een audit door NVWA, team ABB1, plaatsvinden om aan te tonen dat het bedrijf aan de verschillende voorwaarden voldoet. Deze voorwaarden zijn, naast de EU-regelgeving, de aanvullende voorwaarden van de FSIS (VS), zoals in deze instructie beschreven.

4.1 Aanvullende eisen VS, alle bedrijfstypen

Alle bedrijven (slachterijen, uitsnijderijen, koel- en vrieshuizen en vleesproducten-bedrijven) beschikken over:

- **Pre-SSOP en SSOP's ((pre-) Sanitation Standard Operating Procedures)**
- Een geschreven compleet reinigings- en desinfectieplan en registraties met betrekking tot de toepassing ervan, aantoonbaar geaccordeerd en gedateerd door bedrijfsmanager of bedrijfsleider.
- Registraties op controlelijsten met betrekking tot schoonmaak en reinheid vóór aanvang werkzaamheden.

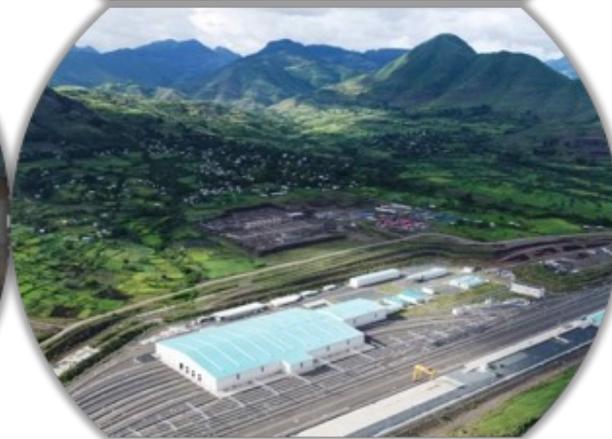


Day 5: Finalize the capstone project

Module	Duration	Learning activities and assessment method
10	4 hrs	Group work supervised by trainers. Finalize the capstone project
Presentations and defence	4 hrs	Presentation, defence, and discussion of the project results
Assessment method		The capstone project will be evaluated using predefined rubric



Programming for Agri-Food Business and Environmental Management





Learning Objectives and Outcomes

Learning Objectives

This course is aimed at introducing students to the basic scripting skills for agri-business and related areas of studies. In addition to scripting techniques, students will be able to understand how to process, present, and analyze data in agri-business domains. This course boosts students' abilities to use emerging IT tools used in many parts of the world for research and industrial projects.

Learning Outcomes

By the end of the course, students will be able to:

- understand the basic concepts in programming languages,
- write simple Python scripts for processing data,
- grasp the basic skills of data science and basic data processing tools,
- apply basic programming to agri-business-related applications,
- create a workflow for automating data processing and analysis, and
- apply acquired knowledge to address research questions in agri-business areas.

Day 4: Data processing	
Modules	Learning activities and assessment method
Module 7 (2 hrs.)	Lecture and discussion: Introduction to data processing, file reading, and writing, introduction to web scraping frameworks and tools such as BeautifulSoup.
Module 8 (2 hrs.)	Lecture and discussion: Extend the file processing, introduce different techniques on file processing such as CSV, text, PDF file processing, and basic introduction to NumPy and Pandas.

Day 5: Data visualization	
Modules	Learning activities and assessment method
Module 9 (3 hr)	Lecture and Hands-on: Introduce basic visualization tools in Python and discuss their importance. Find agri-business-related open-source data to demonstrate visualization
Module 10 (3 hr)	Lecture and Hands-on: Introduce more visualization tools and allow students to create their own dataset for visualization.

Big Data Analytics for Agricultural and Environmental Management



Learning Objectives and Outcomes

Learning Objectives

This course is aimed at introducing the use of emerging IT tools in facilitating studies on agriculture and the environment. Big data analytic tools will be introduced, followed by a discussion of their applications in agriculture, environment, and geospatial analysis with targeted use cases and representative tools for the analysis of data from a multitude of physical sources. The basics of AI and machine learning for agriculture and the environment will also be briefly discussed. FAO's WaPOR data and portal will be explored through a capstone project as an example of a big data application for environmental (land and water) management.

Learning Outcomes

By the end of the course, students will be able to:

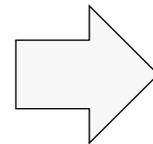
- Understand big data and the 5 V's
- Understand Data Preprocessing and Transformation
- Identify some big data analytics tools
- Use programming APIs to extract from big data sources
- Process and transform textual big data
- Analyze big data applications for land and water management
- Examine the environmental status of a local case study using spatial (big) data analysis

Day 5: Capstone group project (3-5 individuals)

Modules	What will learners do in this module?
Module 8 (II) (4hrs.)	<ul style="list-style-type: none">- Colab notebook presentation, code, and sample data on accessing WaPOR data via API- Student activities:<ul style="list-style-type: none">- attend lecture and quizzes,- analyze land cover classification, biomass water productivity, actual evapotranspiration and interception, and precipitation of WaPOR via API
Module 9 (4 hrs.)	<ul style="list-style-type: none">- Apply any of the methods (WaPOR portal, QGIS, or API via python) to analyze land cover classification, biomass water productivity, actual evapotranspiration & interception, and precipitation using WaPOR data on a local case study (Dessie - Zuria)
Quiz and assignment	Group assignment: report and present use case application

Phase II

Training and Deployment of an LMS



Thank you

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