Establishing and scaling up breeding programs:
A challenging, but not impossible task

Maria Wurzinger

University of Natural Resources and Life Sciences
Vienna, Austria

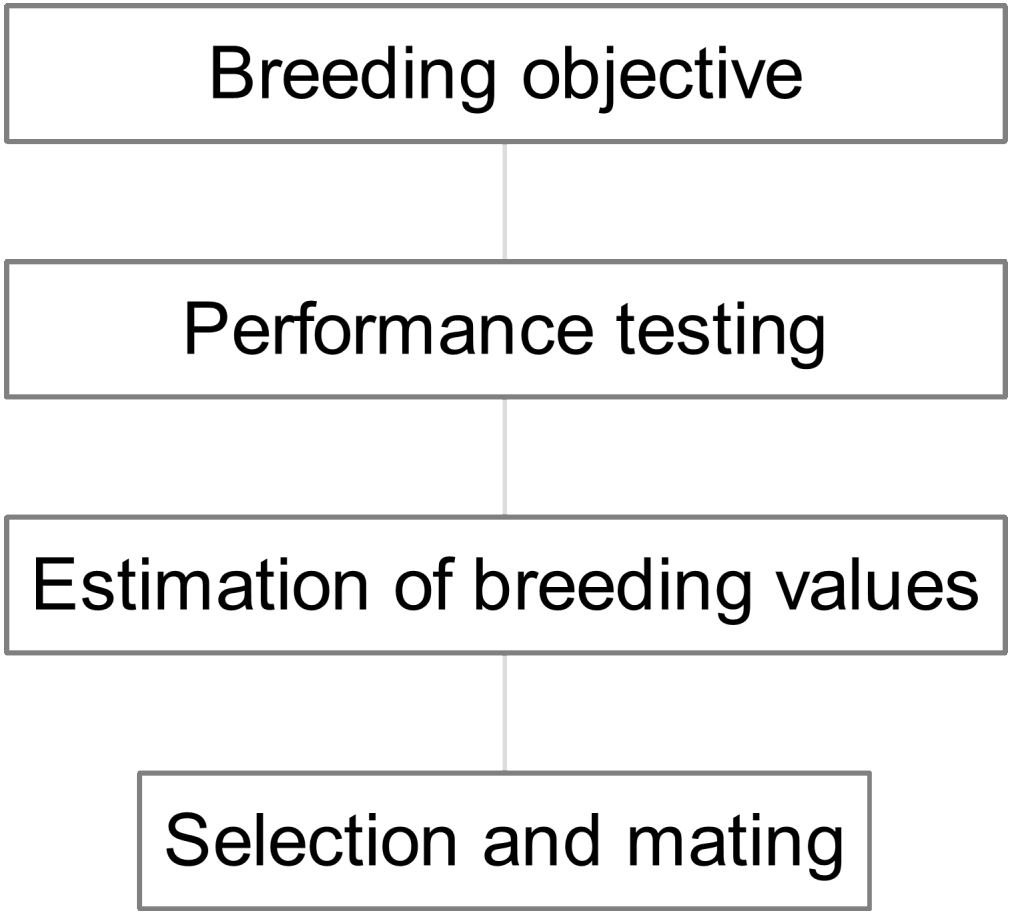
Breeding programs

Breeding programs on purebred breeding animals are carried out with the overall aim of **improving, in a sustainable manner, the production and non-production traits** of animals of a breed or to preserve a breed.

Those **breeding programs** should cover a **sufficiently large number of purebred breeding animals** kept by breeders which, through breeding and selection, promote and develop desirable traits in those animals or guarantee the preservation of the breed, in accordance with the objectives that are commonly accepted by the participating breeders.

EU animal breeding regulation, 2016

Animal breeding flowchart



Questions to be answered

- **Where** to go? = breeding goal
- **How** to get there? = breeding measures
- **When** is what to do? = chronical order of measures
- **Who** is doing what? = breeding organisation

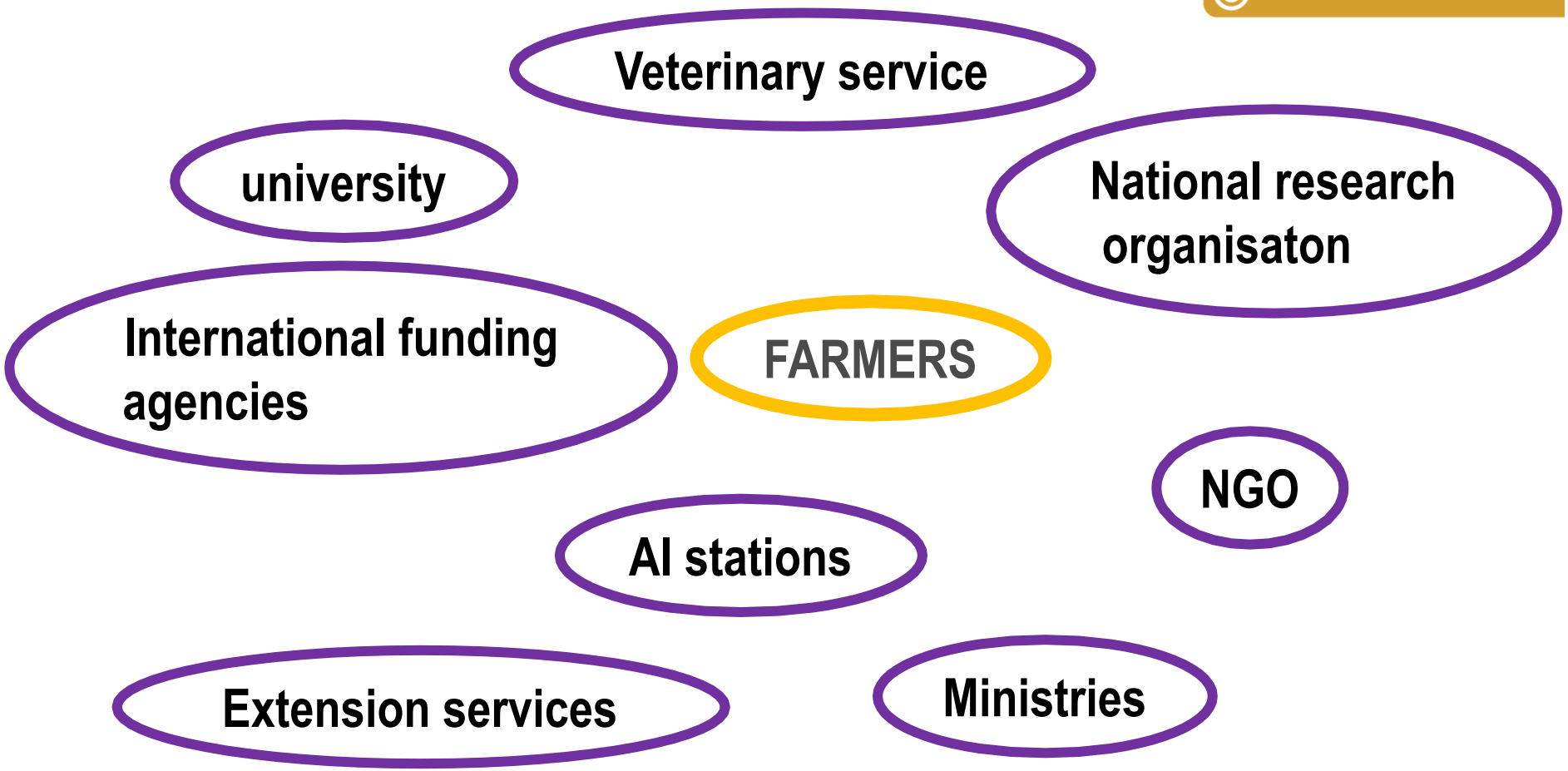
(Willam, 2008)

Community-based breeding programs (CBBP)

- Decentralized, local breeding programs
- Market orientation: subsistence – market
- Local breeds
- Proper consideration of farmers breeding objectives, infrastructure
- Participation of farmers at all stages of the program
- Risk taker: farmers

(Mueller et al., 2015)

WHO? - Stakeholders



Case study 1.

ESTABLISHING a community-based llama breeding program in Peru

(Wurzinger & Gutierrez, 2017)

Background

- 2011-2017: 3 externally funded projects
- 2 neighbouring regions in the Central Andes
- Cooperation partners:
  - National university
  - University from Europe
  - Farmers

Stakeholders identified

	Region 1	Region 2
Ministry of Agriculture	X	X
Local NGO		X
Local university		X
National research organisation INIA		
National Service of Agricultural Health SENASA	X	X
National extension service	n.a.	n.a.

Organisation of breeding program

- Region 1
  - All members of community assembly decided
  - Community provided communal land for a nucleus herd
- Region 2
  - PROLLAMA - Association of llama keepers was formed with 70 members
  - 3 cooperatives and NGO: nucleus herds

Case 1. Lessons learned

- Consultation process takes time (about 9 months)
- Unclear financial support for all parties was a major constraint.
- Communities have different approach for the governance structure of a breeding program (political arbitrariness).
- Formal association has more negotation power than individual farmer („participatory budgeting process“).
- Success can take time: regional government of Region 2 decided after 10 years on financial support.

Case study 2.

UP SCALING of community-based goat breeding programs in Malawi and Uganda

(Kaumbata et al., 2020)

What is scaling up?

Scaling up

Vertical Scaling up

Impacting laws and policy

Changing institutions at the level of policy, rules and laws

Scaling out

Horizontal Scaling up

Impacting greater numbers

Replication, dissemination: increasing number of people or communities impacted

Usually happens simultaneously

Process

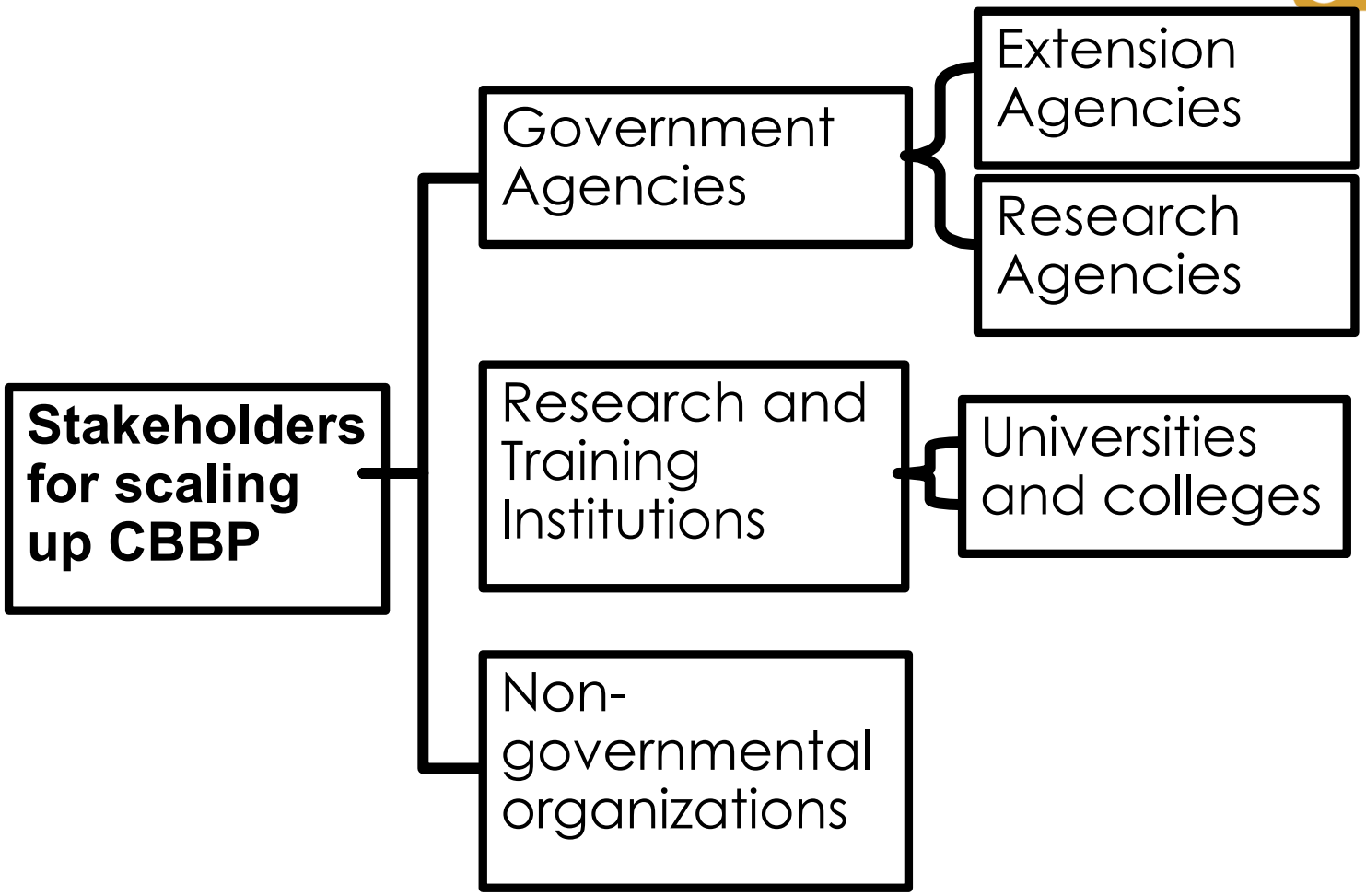
Stakeholders identification

- ✓ Stakeholder inventory
- ✓ Personal interviews

Stakeholders engagement

- ✓ Workshops to identify projects and sites
- ✓ Set-up a task force
- ✓ Follow-up meetings for action planning

Potential stakeholders



Case 2. Lessons learned

- Ill-timing of stakeholder engagement for scaling up.
- Collaborative efforts should have started at inception of pilot activities.
- Budgetary integration was challenging.
- Arrangement required initial joint planning.
- Integration process required adequate time and resources.

Case study 3.

MERGING of alpaca breeding programs in Peru: from individual iniatives to a national breeding program?

(Wurzinger & Gutierrez, 2022)

Background

- Legal background
  - 1996: alpacas declared national genetic resource
  - 1997: national registry for breeding animals
  - 2004: promotion of genetic improvement and conservation
  - 2017: Livestock development plan mentions design and implementation of a breeding program as a strategic action.

Selected initatives

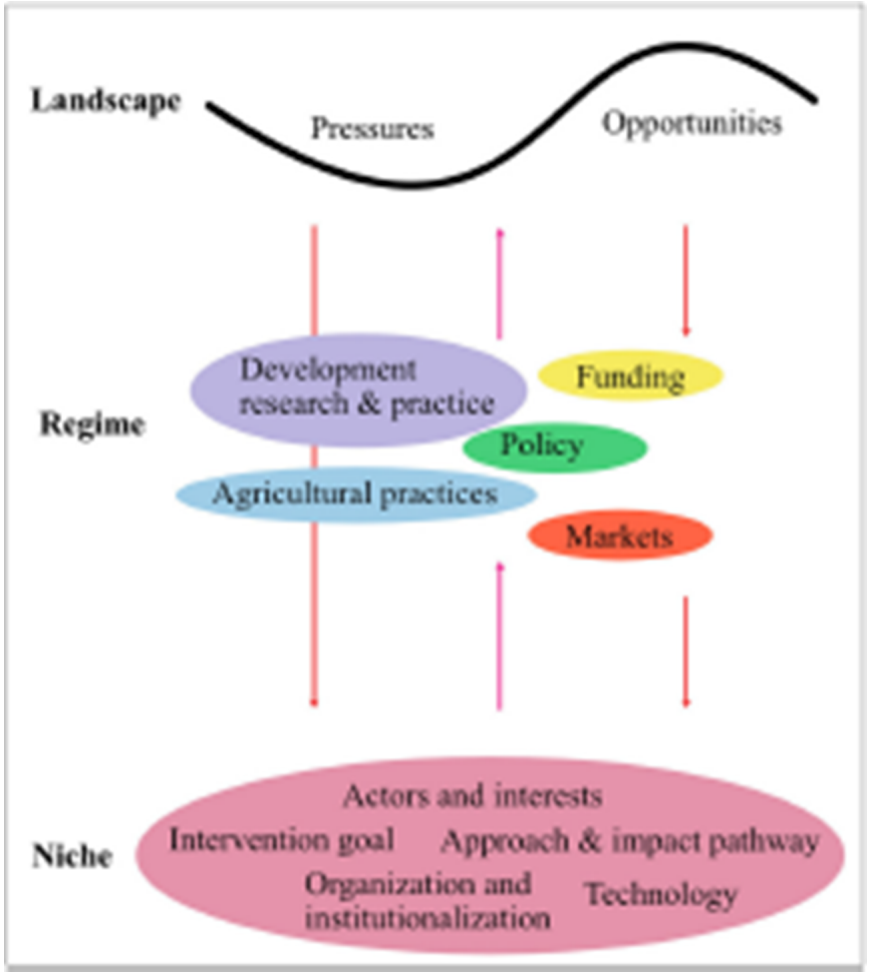
Ownership	Farmers	Start	Females	Selection criteria	Genetic evaluation	Population structure
Company	1	2001	2400	FD, PM	BLUP	Closed nucleus
Company	1	2000	400	FD, FW	BLUP	Nucleus +BP
Cooperative	493	1998	540	FD, FW	Visual	Closed nucleus
Farmer	1	2012	400	FD	Visual	Closed nucleus
Company	90	2018	47	FD	Visual	Nucleus +BP
Farmer	1	2005	150	FD, DW	Visual	Nucleus+BP
Company	1	1994	350	FD, FW, FL	BLUP	Closed population
Company	1	1980	5200	FD	Visual	Nucleus+BP

FD=fiber diameter, PM=percentage of medullation, FW=fleece weight, BP=base population

Case 3. Lessons learned

- Interviewees were in favor of a national breeding program, but the organisation of the transformation process remained unclear.
- Obstacles to overcome:
  - Individual breeding programs are competitors for selling breeding animals.
  - Transfer of decision-making power
  - Social inequalities

Multi-level perspective



(Probst et al., 2021)

Challenges

- Landscape
  - Long-term funding
  - Role of policies
  - Broader societal dynamics
- Regime
  - Market lingages
  - Policy level

Challenges

- Niche
  - Collection and managment of data
  - Association/cooperatives important as starting point
  - Extension agent
  - Mulit-stakeholder platforms
  - Integration of breeding association in the value chain

TAKE HOME MESSAGE

- **ESTABLISHING** breeding programs not always successful, can take a long time.
- **UP-SCALING** breeding programs requires good planning at an early stage.
- **MERGING** of breeding programs feasible if there is a good incentive.
- **MORE research** on organisation of breeding programs is needed.

Establishing and scaling up breeding programs:

A challenging, but not impossible task

maria.wurzinger@boku.ac.at

Identify and engage stakeholder process

..two outputs:

Model adoption by partner organizations

↓

Model replication to reach more farmers
Scaling out

Model adoption by policy instruments and sector programs

↓

Model financing & sustainability
Scaling up