

Public Participation in Managing Wild Plant Harvest

This module explores wild plant harvest practices, use and non-use values, problems and solutions. Use cases are used to explore wild plant harvest, including wild medicinal plant harvest and sustainable harvest practices.

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Learning Objectives

Section 1 will give a theoretical overview on the topic of wild harvest, its significance, challenges and potential. It will discuss participatory tools that can be used to assess wild harvest.

Section 2 will show the application of participatory approaches related to wild harvest through different case studies. Case Studies contain scientific as well as non-academic examples.

Section 3 will outline trends and potential of participatory approaches for wild harvest management, and highlight opportunities along different topics in Armenia.

Module Structure

Module section

Theoretical Background

Breakpoint Activity

Applications of Public Participation

Breakpoint Activities

Trends and Potential of Participatory Approaches

Breakpoint Activities

Section 1

To give a theoretical overview on the topic of wild harvest, its significance, challenges and potential. To discuss participatory tools that can be used to assess wild harvest.

Theoretical background

Definitions

- “Wild plant harvest” is an activity in which plants or fungi are removed from their natural environment to use as medicine, food, fuel, et cetera
- “Wild plants” are plants that grow by themselves without cultivation



Theoretical background

Current status of wild harvest

In **Armenia**, wild harvest has been important for centuries. **60% of flora** includes traditional herbs:

~2000

Herbs used traditionally

The Strategy and National Action Plan of the Republic of Armenia on Conservation, Protection, Reproduction and Use of **Biological Diversity** (2015) identifies:

~120

Wild fruits and berries

~350

Honey plant species

~290

Edible mushrooms

~200

Edible species

The above list includes plant species used as medicinal and aromatic plants.

Theoretical background

Use values of wild plants

- Food
 - Globally, there are more than 30,000 plants that are known as food
 - Additional nutrient source in low-income countries → diversification of diets, food security
 - Opportunity to counterbalance hunger and malnutrition
- Tea
 - In the Southern Caucasus herbal teas have been part of traditions for millenia



Theoretical background



Use values of wild plants

- Medicinal substances
 - More than 10% of the entire Armenian flora
 - In some cases medicinal properties are valued higher than edibility
 - Often food plants are valued for their medicinal properties and health benefits although they might not be medicine specifically

Theoretical background

Use values of wild plants

- Other uses of wild plants
 - Spices
 - Decoration
 - Aromatic plants
 - Cosmetics
 - etc.



Theoretical background

Non-use values of wild plants

- Environmental stewardship and connectedness with nature
- Cultural values: Traditional practice (e.g. herbal teas), folk medicine
- Social values: Group activity, family connection, family heritage
- Gender Dynamics



Breakpoint Activity



1. Watch the video

<https://www.youtube.com/watch?v=fXrG8js6teE>



Theoretical background



Importance and significance

- Food and medicinal security
- Genetic resources
- Income security
 - Sale of collected products can buffer and support vulnerable households economically
- Social and cultural values

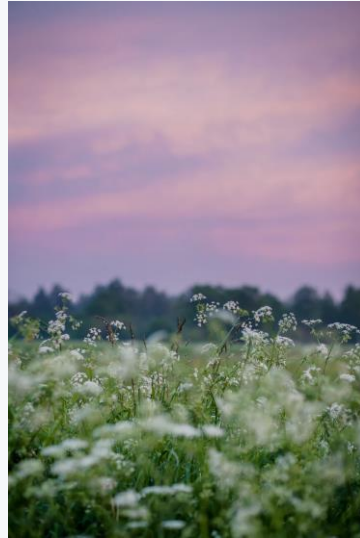
Theoretical background

Problems and challenges

- Economic challenges
 - Mismatch between supply and demand:
 - quantities, seasonality
 - Unstable market with fluctuations in demand
 - Lack of market access for local harvesters
 - Lack of cooperation along the value chain
 - Insufficient knowledge on how to create value added goods



Theoretical background



Problems and challenges

- Legal constraints
 - Lack of data availability
 - Permit system in place that is not properly enforced
 - No proper legal base on wild harvest at this point in time

Theoretical background

Problems and challenges

- Loss of ecological knowledge
 - Traditional customs are abandoned by younger generations
→ intergenerational changes in lifestyles
 - Drivers: shifting interests, migration, urbanization etc.
 - Availability of modern pharmaceuticals or readily available food eliminates the need for wild harvest
 - Loss of knowledge increases risk of unsustainable harvest



Theoretical background

Problems and challenges

- Unsustainable harvest
 - Inadequate harvesting practices might severely damage plant populations
 - Overharvest (e.g. large quantities for generating economic benefit) exhausts resources and lead to a decline of wild plant availability
 - Decreased availability puts more pressure on the resources that are still available → cycle
 - Decline in biodiversity and habitat destruction have diverse consequences and threaten food security, income security, genetic resources, cultural and social integrity, et cetera

Theoretical background

Sustainable harvest: Solutions

- Wild plant harvest should not exceed the regenerative capacity of an ecosystem → long-term survival of a plant population needs to be ensured
- Depends on
 - Climatic conditions and seasonality
 - Plant population
 - Properties of individual species
 - Harvesters and specific harvesting practices
- Sustainable harvest is very specific for individual cases and difficult to define



Theoretical background

Sustainable harvest: Solutions

- Solutions to ensure sustainable harvest
 - Preparation of context-specific guidelines for wild harvest
 - Identification of general good practices
 - Increased awareness on sustainability is needed → broad concept helpful to achieve sustainability
 - Adequate laws and regulations and enforcement
 - Alternative solutions: e.g. cultivate plants at home instead of harvesting them from the wild



Breakpoint Activity 1



Activity: A Taste of the Wild Side: Finding Local Flavor in Armenia's Edible Highlands

Some quotes from the article:

"Those who carry the burden of the nation's culinary heritage: Armenian grandmothers"

"Explaining each plants story and personal significance"

"These recipes are hereditary, [...] passed down from grandmother to mother, from mother to daughter"

"Sons are excluded from this transmission, as gender roles are fairly strict in traditional Armenian households"

"Aveluk is about as Eastern Armenian as it gets"



Breakpoint Activity 1



Activity ---- A Taste of the Wild Side: Finding Local Flavor in Armenia's Edible Highlands

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"Aveluk is about as Eastern Armenian as it gets"



Conclusions:

- Women are the carriers of culinary (and often cultural) heritage of Armenian society
- Women have substantial botanical knowledge
- Knowledge is transferred across generations, knowledge is difficult to access from the outside
- Strict gender roles in Armenian societies that transfer to wild harvest
- Traditional dishes are part of different local cultures

Theoretical background

Method for research & collective analysis



Citizen Science



Open Voting & Wiki Surveys



Participatory Sensing



Participatory Mapping



Workshops

Method for collective solution generation & execution



Co-Design & Co-Creation



Open Data Initiatives



Hackathons



Serious Gaming

Theoretical background

Research activities for citizen science and co-design

- Different activities
 - Interviews (done once or multiple times)
 - Focus group discussions
 - Field observations with local people
 - Creation of diaries (e.g. on which plants are collected over one season)
 - Active monitoring in the field done by locals

Theoretical background

Research activities for citizen science and co-design

- Different activities
 - Interviews (done once or multiple times)
 - Focus group discussions
 - Field observations with local people
 - Creation of diaries (e.g. on which plants are collected over one season)
 - Active monitoring in the field
- Limits of those activities
 - Might not be sufficient to capture reality if used as stand-alone methods
 - Views of people are always subjective
 - Views of people will always differ to an extent
 - Recall-based methods might be insufficient to capture true status quo
 - Needs to consider other stakeholder groups as well

Theoretical background

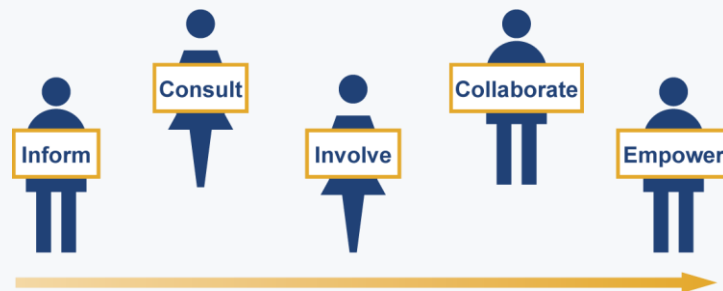
Research activities for citizen science and co-design

- Different activities
 - Interviews (done once or multiple times)
 - Focus group discussions
 - Field observations with local people
 - Active monitoring in the field
 - Creation of diaries (e.g. which plants are collected over one season)
- Supplementary activities
 - Literature review
 - Botanical field identification through specialists (e.g. collection of voucher specimen)
 - Value chain/economic analysis
 - Combine any of the methods described on the left

Theoretical background

Value and potential of public participation

- Capture the view of stakeholders that are usually neglected
- Tap into traditional knowledge that is not accessible elsewhere
- Make the opinions of different stakeholders heard
- Engage local communities in biodiversity monitoring
- Get an understanding of underlying values and processes that might be hidden otherwise
- Combine different aspects like biodiversity conservation, traditional values, economic welfare, et cetera



Breakpoint Activity



1. Think of a case study on wild harvest that you would conduct in Armenia using public participation (10-15 minutes)
2. Consider one of these topics
 - Food security & uses of wild plants
 - Cultural & social values (e.g. gender dynamics)
 - Income security & economic relevance
 - Sustainability & human impact on biodiversity
3. Come up with
 - One or two research questions
 - Methodology (hint: keep in mind which stakeholders to involve!)

Section 2

To show the application of participatory approaches related to wild harvest through different case studies. These contain scientific as well as non-academic examples.

Application of Public Participation

Case study 1: Wild harvest through the eyes of community elders: Traditional practices vs. restrictive legislations

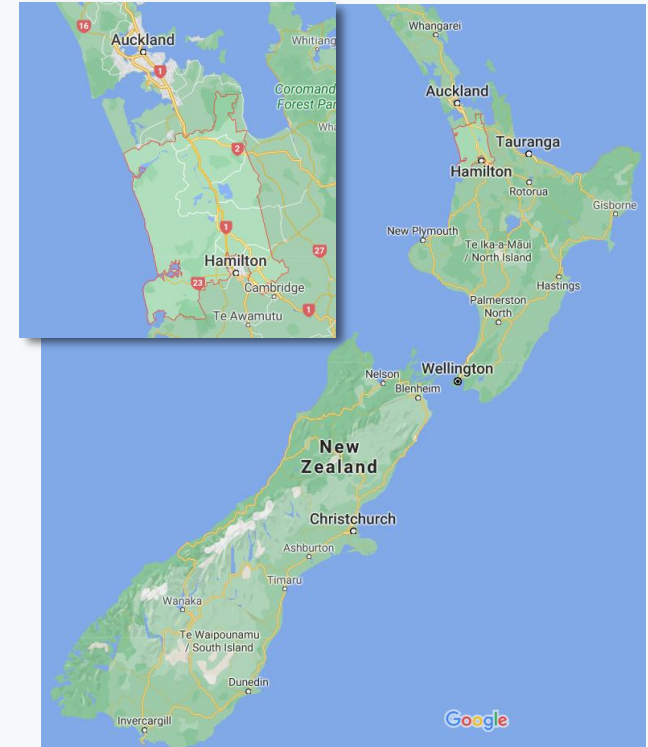


Source: Wehi & Wehi 2009 - New Zealand

Application of Public Participation

Case study 1: Wehi & Wehi 2009 - New Zealand

- Main objectives
 - Gather information on indigenous plant species to identify plants that are currently used by and are of cultural significance to the Waikato Maori tribe
 - Analysis of permit data to see whether the regulatory side has an influence on harvesting patterns
- Methodology
 - Interviews with knowledgeable community elders
 - Analysis of permit data



Application of Public Participation

Case study 1: Wehi & Wehi 2009

Main findings through public participation

Values, dynamics and processes	Specific finding
Cultural values	Cultural values often perceived as more important than use of plants
Legal situation & citizen science	Strict restrictive approach → permit system Tension with local authorities → see as right to self-determination threatened
Ethnobotanical knowledge	Co-management with locals to produce flexible, multilayered systems Role of government to take responsibility → community involvement could be crucial for decision-making processes

Application of Public Participation

Case study 2: Wild foraging in the city: Importance to income & food security



Source: Kaoma & Shackleton 2015 - South Africa

Application of Public Participation

Case study 2: Kaoma & Shackleton 2015

- Main objectives
 - Determination of the consumption value of wild plants sourced within urban settings
 - Hypothesized that collection and consumption of wild plants would be greatest in poorest households
- Methodology
 - Interviews with urban households in informal settlements



Application of Public Participation

Case study 2: Kaoma & Shackleton 2015

Main findings through public participation

Values, dynamics and processes	Specific finding
Income security & economic relevance	Contribution of wild plants (tree products) to income was significant → 20 - 30 % of household income
Food security	Poor households generally collect more wild plants Quantities collected are significant
Legal situation & citizen science	Should be considered in urban planning to maintain this resource Availability and accessibility of urban non-tree forest products necessary

Application of Public Participation

Wrap up of scientific publications: Case study 1 & 2

→ Capture of multifaceted values of wild harvest through public participation by involving local stakeholders

- Both studies were able to highlight underlying processes of wild harvest
 - Wehi & Wehi: Cultural values & regulatory aspects
 - Kaoma & Shackleton: Income & food security

→ Relevance of application of public participation on the topic of wild harvest in academic research

→ Potential for decision-making processes

Breakpoint Activity 1



1. Read the article and watch the video on the website

<https://www.smithsonianmag.com/travel/taste-wild-side-out-yerevan-and-armenias-local-dishes-180960889/>

Breakpoint Activity 2



1. Go to <https://identify.plantnet.org/> and add the picture in the “add/drop image section”
2. Select *Urtica dioica* L. Common nettle and read through the website (if it does not work use this link: <https://identify.plantnet.org/the-plant-list/species/Urtica%20dioica%20L./data>)
3. On the right hand side you find additional information on Common nettle

Breakpoint Activity 2



1. Go to <https://identify.plantnet.org/> and identify the plant
2. Answer the following questions:
 - A. What is the plant's name (botanical and common)?
 - A. Where is it distributed?
 - A. Which parts are used and when are they in season?
 - A. How is the plant used?

Breakpoint Activity 2 [Answers]

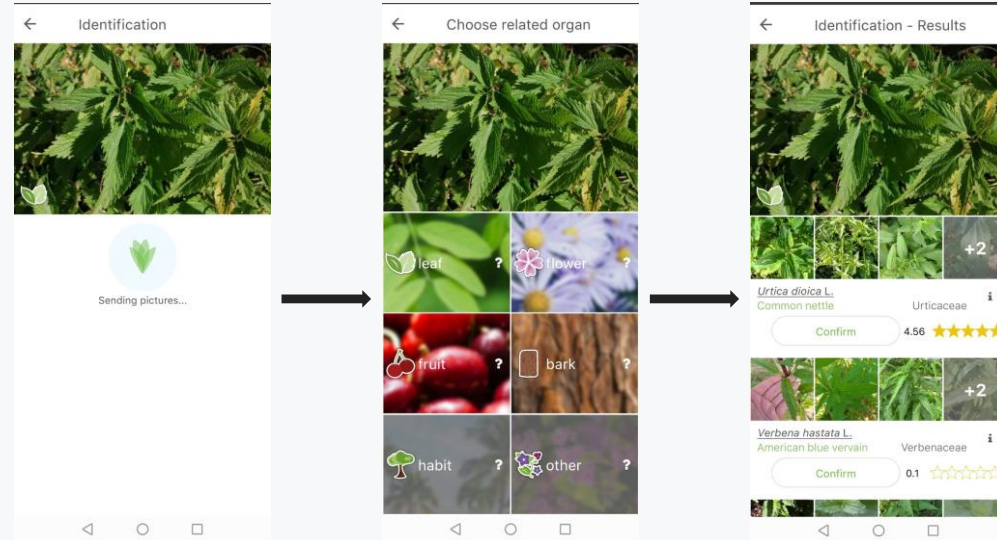


- A. Name: Sea buckthorn, *Hippophae rhamnoides* L.
- A. Distribution: Most of Europe, parts of Canada & the US, Armenia
- A. Fruits, Northern hemisphere: September - November
- A. Food industry, traditional medicine, cosmetics

Application of Public Participation

Case study 3: PlantNet

- PlantNet is an online platform for botanical identification: Website and mobile application
- Picture is fed into the system, plant organ needs to be selected
- Algorithm cross-references picture and gives an approximation of the species
- If pictures are matching, the user can submit a suggestion which is verified by the community



Application of Public Participation

Case study 3: PlantNet

- Citizen science through participation of all app-users
- Becomes more and more accurate the more data is fed into the system
- Machine-learning by refining algorithms
- Participatory approach of botanical identification that is tailored to the need of app-users

Application of Public Participation

Case study 4: Application of Public Participation for sustainable harvest of medicinal non-timber forest products



Source: Mark, G.B. & Rao 2017 & 2018

Application of Public Participation

Case study 4: Mark, G.B. & Rao 2017 & 2018

- Challenges
 - Large number of species “threatened”
 - Good practices are species and situation specific
 - Environmental factors (predictability)
 - Clarity of land and resource tenure
 - Large number of products and markets
 - Long and complex supply chains



Application of Public Participation

Case study 4: Mark, G.B. & Rao 2017 & 2018

- Main objectives
 - Identify and implement sustainable harvesting practices for medicinal non-timber forest products in regions of Kerala, India
 - Improve livelihoods of local people through improved market access
- Methodology
 - Implementation of main objectives through public participation
 - Formation of “Task Teams”: Group of 10-15 people with different stakeholders: Forest department, traditional healers, women’s group, plant collectors, traders, local body members etc.



Application of Public Participation

Case study 4: Mark, G.B. & Rao 2017 & 2018

- Implementation of sustainable harvest through participatory approach
 - Identification and training of grassroots stakeholders
 - Task team members identify key species identification & conduct resource assessment
 - Equipment and tools
 - Field training
 - Enforcement of identified practices
 - Infrastructural facilities
 - Post-harvest interventions and value adding
 - Market linkages
 - Price appreciation

PUBLIC PARTICIPATION



Application of Public Participation

Case study 4: Mark, G.B. & Rao 2017 & 2018

- Effects and outcome
 - Species specific sustainable wild collection protocols for 48 species for different parts harvested at diverse geographical locations in India
 - Institutional arrangements established for implementation of sustainable wild collection, value addition and marketing
 - Collection sites were identified and registered
 - Direct marketing has been arranged by linking industry and locals



Breakpoint Activity



1. Check out the following website

<https://ace.aua.am/wild-plant-collection/>

Section 3

To outline trends and potential of participatory approaches for wild harvest management generally, and then highlight this opportunity along different topics specifically for Armenia.

Trends & potential of participatory approaches

Section 3 prep

- Capture of multifaceted values of and approaches to wild harvest through public participation by involving local stakeholders and the global community
- How can participatory approaches capture different sets of problems related to wild harvest and help to find solutions?

Trends & potential of participatory approaches

Botanical inventory

Problem

- In many countries (including Armenia) adequate data on the stock of wild plants is absent
- Regulation of an unknown resource is difficult if not impossible
- Data gaps on which plants are endangered might be prevalent

Potential of participatory approaches

- Locals are out in the field harvesting wild plants
- Surveys on plant availability and distribution with knowledgeable locals based on their recall
- Actively involving local harvesters in mapping (key) species and generating a database



Trends & potential of participatory approaches

Sustainable harvest

Problem

- Often no information on how wild harvest is done and whether it is detrimental to biodiversity
- Good practices are difficult to identify because they are context-specific and depend on multiple drivers
- Lacking a code of good practices makes the identification of regulations difficult

Potential of participatory approaches

- Context-specific solutions require context-specific information
- Identification of key species to narrow down the need for regulations
- Identification of common good practices and raising awareness on sustainability



Trends & potential of participatory approaches

Food security

Problem

- Often data on how wild harvest contributes to the livelihoods of vulnerable households is missing
- Regulating wild harvest without considering locals can have severe consequences for them
- Unregulated wild harvest might be detrimental to biodiversity

Potential of participatory approaches

- Participatory approaches can to help protect vulnerable households against food shortages
- Assessing the contribution of wild harvest to the livelihood of locals can give comprehensive insight for decision-making processes and identification of regulations



Trends & potential of participatory approaches

Economic assessment & income security

Problem

- Wild harvest can significantly contribute to the income of vulnerable households.
- Often trade happens informally and is not captured by official statistics
- Inadequate regulations can expose vulnerable households to economic shortages

Potential of participatory approaches

- Participatory approaches can reveal the significance of wild harvest to the income of locals
- Can capture economic value of the shadow economy and help to navigate and regulate informal sector
- Public participation can help to protect locals against economic crises



Trends & potential of participatory approaches

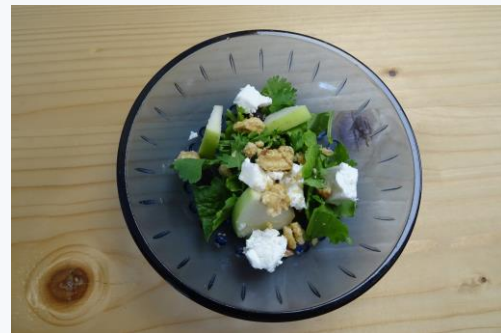
Value chain

Problem

- Lack of cooperation between stakeholders in the value chain might lead to exploitation of local harvesters
- Absence of coordination between stakeholders makes it difficult to meet the market demand
- Missing sense of value added goods of local harvesters could lead to different ideas on product quality

Potential of participatory approaches

- Public participation can start a dialogue and connect different steps of the value chain
- Public participation can help connect value chains and make them more responsive to market changes
- Public participation can help expose exploitation and create a supportive economic environment



Trends & potential of participatory approaches

Ethnobotanical knowledge

Problem

- Traditional knowledge is frequently lost globally
- Losing that knowledge means losing valuable information
- Losing ethnobotanical knowledge means losing parts of local cultures

Potential of participatory approaches

- Documenting ethnobotanical knowledge and preserving it for future generations
- Huge potential for the future, for example to document medicinal properties of plants for research
- Creating value through that knowledge, for instance to identify sustainable practices



Trends & potential of participatory approaches

Regulations and policy development

Problem

- Lack of data makes it difficult to define adequate policy
- Regulations are often not enforced and permit systems for wild harvest are not recognized in Armenia
- The legal base to certify wild harvest in Armenia is missing

Potential of participatory approaches

- Including different stakeholders can help to gather data, which is fundamental for regulations
- Public participation can navigate the complexity of the issue and define solutions with practical relevance
- Involving locals supports the most affected people and makes it more likely that regulations are accepted



Trends & potential of participatory approaches

In summary, public participation can help to

- Close data gaps
- Identify good practices that have practical relevance
- Foster biodiversity conservation through community-led environmental stewardship
- Utilize and preserve traditional knowledge
- Protect vulnerable communities and local stakeholders
- Connect value chains and make them economically sustainable
- Support women empowerment
- Help define policies and create a legal base to certify wild harvest

Breakpoint Activity



1. Check out the following project

<https://1000leaf.aua.am/>

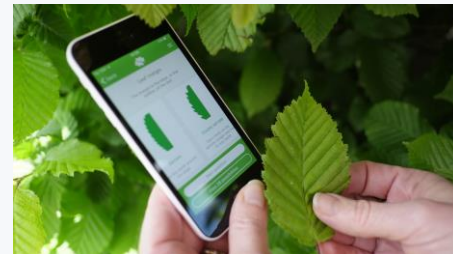
About the Project

- Collaboration between Armenian Environmental Network and the Acopian Center for the Environment of the American University of Armenia
- Participatory tool in which citizen scientists can submit information on plants → online community
- Combines the skills of local residents and local botanists
- It offers information on plants and mushrooms collected in Armenia, sustainable harvest, recipes, and provides additional resources

Trends & potential of participatory approaches

Technological innovations

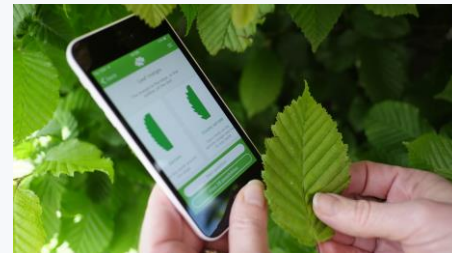
- Creation of an IT feature
 - Information platform
 - Network creation
 - Information on regulatory environment
 - Instructions on sustainable practices
 - Mapping of plant collection
 - Maps with protected areas
 - Recording of other plant properties: quantity, quality, use etc.



Trends & potential of participatory approaches

Technological innovations

- Mobile application
 - Web platform
- Can be beneficial to all parties involved to make information and exchange easier and faster
- User interface can be designed to suit the specific needs of stakeholders
- Participatory approach that creates value for all stakeholders



Trends & potential of participatory approaches

Stakeholder connection & networking

Stakeholder group 1	Stakeholder group 2	Benefits of networking
Wild harvesters	Wild harvesters	Information exchange → Empowerment
	Intermediaries/processors	Connectivity of value chains
	Local businesses (e.g. restaurants)	Shortens value chains & decreases risk of economic exploitation
	Consumers	Transparency
	Policy makers	Inclusivity in decision-making processes

Trends & potential of participatory approaches

Educational campaigns

- Provide trainings for local harvesters and other stakeholders
 - On sustainable practices
 - On economic opportunity and alternative business models
 - On the regulatory environment
- Raising awareness about the multifaceted values of wild harvest among consumers
 - Integrate science and practical reality: e.g. lectures, excursions, studies & projects on wild harvest
 - Provide activities for school-children and youth groups
 - Organize events and festivals for consumers to get to know wild harvest in the field
 - Support community networks and citizen science databases



Trends & potential of participatory approaches

Wild harvest and women empowerment

Problems

- Women frequently do not hold much responsibility besides collection and sorting in the value chain
- The pronounced gender roles and the activity of women are a data gap that is usually not addressed
- Market failure to include and support women → Economically neglecting women is neglecting half of the (local) population
- Women frequently lack the skills, knowledge and self-esteem to be more successful economically



Trends & potential of participatory approaches

Wild harvest and women empowerment

Solutions

- Include the voices of women through targeted participatory approaches
- Network creation can help connect women to exchange information and give them a bigger foothold in the economy
- Help women build skills in sustainable harvest and entrepreneurship → biodiversity conservation and economic welfare
- Using the ethnobotanical knowledge of women for new business models



Wrap up & Conclusion

How can participatory approaches capture different sets of problems related to wild harvest and help find solutions?

Public participation in general can

- Facilitate knowledge and information exchange
- Connect and organize different stakeholders
- Generate information and databases
- Identify key species and good practices
- Support decision-making processes



End

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