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INOW ASIA

WP1: Preparation

The INOWASIA Consortium

Universitat de Girona (UdG)	Spain
Fundació Solidaritat Universitat Barcelona (UB)	Spain
World University Service of the Mediterranean (WUSMED)	Spain
Institut de Recherche pour le Développement (IRD)	France
Université Paul Sabatier Toulouse III (UPS)	France
Hanoi University of Science – Vietnam National University (HUS)	Vietnam
Can Tho University (CTU)	Vietnam
National University of Laos (NUOL)	Laos
Souphanouvong University (SU)	Laos
Institute of Technology of Cambodia (ITC)	Cambodia
University of Battambang (NUBB)	Cambodia

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Report on defined academic and labour-market requirements

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Abstract

This document presents the study of the academic definition and labor-market requirements in Cambodia, Laos and Vietnam for the curriculum to be developed. A questionnaire has been elaborated by WP1 Leaders (FSUB and NUBB); completed and validated for all partners and due Covid-19 restrictions has been elaborated in google form. The survey aims to identify the in-demand skills by the local labor market in the field of water in Cambodia, Laos and Vietnam in collaboration with public and private stakeholders. The survey was distributed to INOWASIA Academic Professional Committee. (APC) members. This report includes the questionnaire template, a graphical analysis of the responses and the main outputs. These outputs serve for the WP2 course design.

Document History

Version	Date	Comments
V0.1	16-06-2021	First draft
V0.2	10-09-2021	Second draft
Final draft	11-11-2021	Final version

Contents

Acronyms

D	Deliverable
HEIs	Higher Education Institutions
WP	Work Package
KOM	Kick-off Meeting
APC	Academic Professional Committee

Identification of the specific required competences of the local labour markets: methodology

A joined questionnaire **Questionnaire 1: Water Challenges and Academic-Labour Market Competences in Cambodia, Laos and Vietnam** has been elaborated by WP1 Leaders (FSUB and NUBB); completed and validated for all partners. The survey intends to compile information on both academic and labor market requirements (for D1.2. Report on defined academic and labour-market requirements) and the water challenges (And D1.7. Report on local emphasis). Due Covid-19 restrictions the survey has been elaborated in google form and has been distributed to INOWASIA Academic Professional Committee (APC) members (Annex 1).

Objectives:

- To gather the basic information about the water challenges faced by the country and at local level in case there are strong water challenges specificities at local scale. We understand as a local scale the closest territorial area of the institution (Deliverable D1.7)

- To anticipate academic and labour market competencies on water in order to build the water modules which adapts and innovates from current academic offer, and tackles local water challenges and employability demands (Deliverable D1.2)

Target audiences:

- Public Administration with water competencies

- Private companies working on water management

- Water related research and education institutions/Platforms

- Water-Environment and/or development NGOs (foundations, and associations; grassroots community-based organizations; international NGOs present in the country...)

Goal:

- At least 2 replies from each type of target audience (replies will express individual opinions, unless it is manifested otherwise).

Questionnaire Template

PART A- WATER CHALLENGES

1. **What is the general current state of water resources in your country in terms of quantity and quality?**

2. **What are the main current water challenges in your country?**

3. **What are the main current water challenges at local scale*?** Only fill if your local area is facing specific water challenges (*We understand as a local scale the closest territorial area of the institution).

4. **What are the strengths (if any) in water management in your country?**

5. **What are the most water demanding sectors in your country? (two or three sectors are enough)**

6. **What are the causes of water pollution in your country? Rate from 0 (low) to 4 (high):**

Causes of water pollution	**0**	**1**	**2**	**3**	**4**
Poor urban sanitation					
Poor sanitation in rural areas					
Industry					
Agriculture					
Tourism					
Others (specify)					

7. **Future: what are the main factors that can affect the water resource's state in your country in the mid-long term (10-20 years prediction)?** (e.g. climate change, demography, urban growth, energy transition, governance issues, ecological and landscape changes, tourism development, industry development, agriculture growth/recession, …)

PART B ACADEMIC-LABOUR MARKET COMPETENCES

8. **Please rate current employability on the water market graduates in your country. Rate from 0 (low) to 4 (high):**

Employment field	**0**	**1**	**2**	**3**	**4**
Administration (governance, planning)					
Water supply and drinking management					
Wastewater management					
Agriculture (irrigation)					
Industry (agro-food, chemical, leather, pharmaceutical…)					
Water, nature and biodiversity conservation					
Water quality (labs)					
River management and basin management					
Consulting					
Engineering and construction enterprises					
Green spaces and landscape architecture					
Forestry					
Seawater treatment					
Research, Development and Innovation					
Education					
NGOs- Cooperation for development in Water Hygiene and Sanitation					
Tourism					
Others:					

9. We will develop multi-level formation programs* in INOWASIA for the new water leading professionals in Southeast Asia countries. From your point of view, what are the sectors that will demand more **water resource professionals in the future?**

*Multi-level formation programs: INOWASIA will design formation programs with basic and advanced water courses and implement them in the existing master's degrees and PhD programs in Higher Education Institutions from Cambodia, Laos and Vietnam

10. We have defined the following basic and advanced water courses for the INOWASIA formation programs. **Please rate from 0 (low) to 4 (high) the relevance in your country.**

Water modules	0	1	2	3	4
Basic Modules					
Water quality					
Water and wastewater treatment technologies					
Water microbiology					
Water management and recycling in small and large water companies					
Water monitoring and control					
Natural services related to water regulation and provision					
Advanced modules					
Alternative water resources					
Management tools-ITCs for water management					
General concepts on water sustainable management					
Nature based solutions for water management and resilience"					
Eco-hydrology and ecological engineering					
Soil and water dynamics					
Water and tourism management					
Innovative technologies and new trends on sanitation					
Circular economy in the context of water					
Water governance and socio-economic aspects in the water field					
Water economy and entrepreneurship					
Sustainable Water management in agriculture: rural and urban areas					
Ecological engineering and water management					
Ecosystems services and benefits to people valuation and payment for ecosystem services					
Water and smart cities: sustainable water management and smart cities					
Integrated Water Management and Transboundary Water Resources Management					
Others:					

Please feel free to add any comment:

12- Please rate the personal competencies needed for future water professionals in your country (0: low / 4: high)

Competences	0	1	2	3	4
Critical thinking					
Autonomy					
Leadership					
Communication					
Team working					
Responsibility					
Empathy					
Flexibility					
Languages					
Entrepreneurship					
Innovation capacity					
Others:					

Results: Questionnaire PART B- Academic-Labour Market Competences in Cambodia, Laos and Vietnam

Total responses: 16

Indicate your country

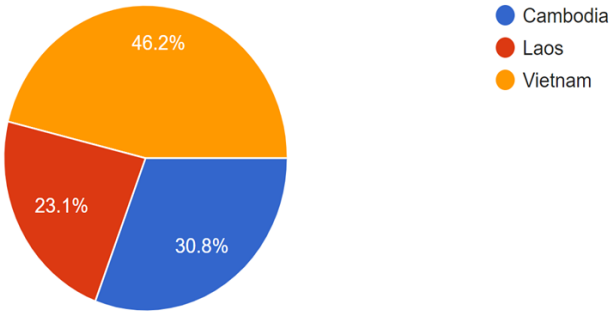


Figure 1. Percentage answers per country

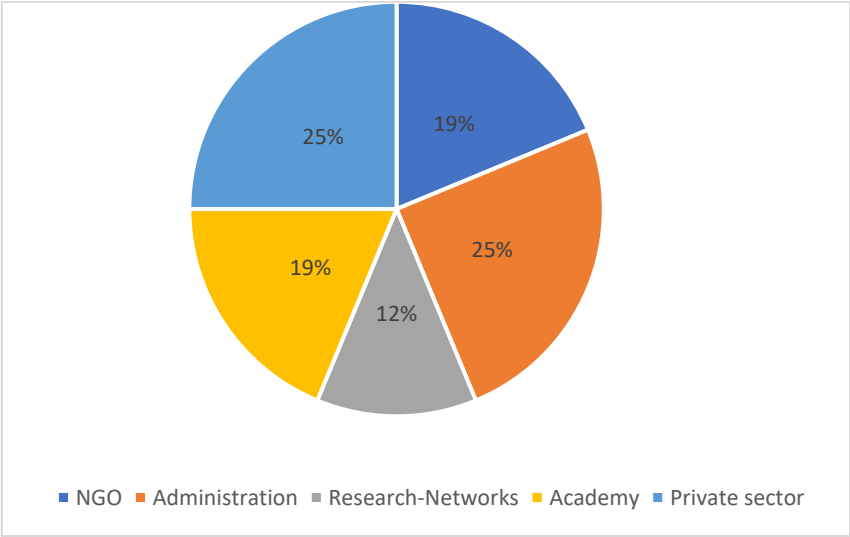
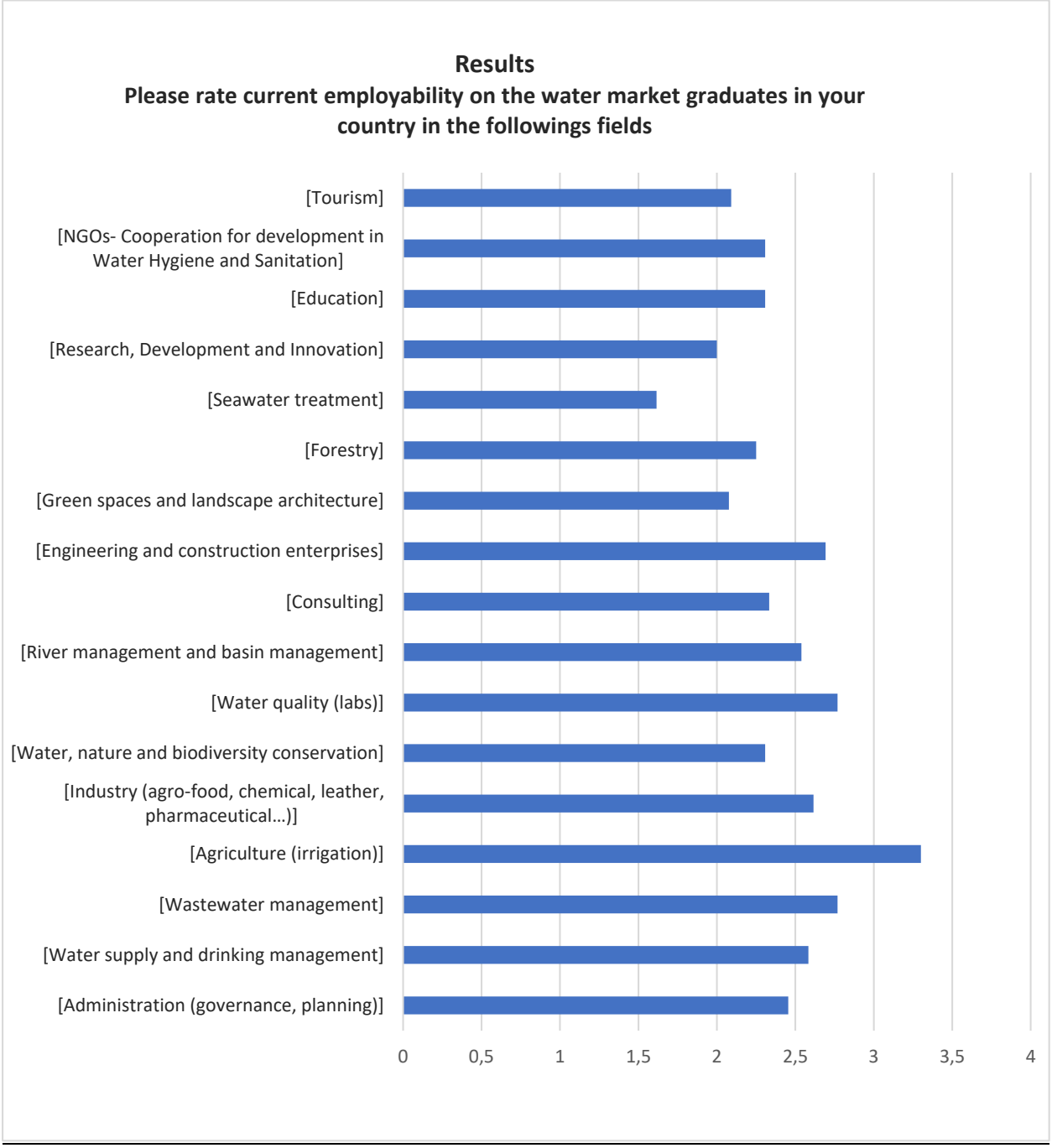


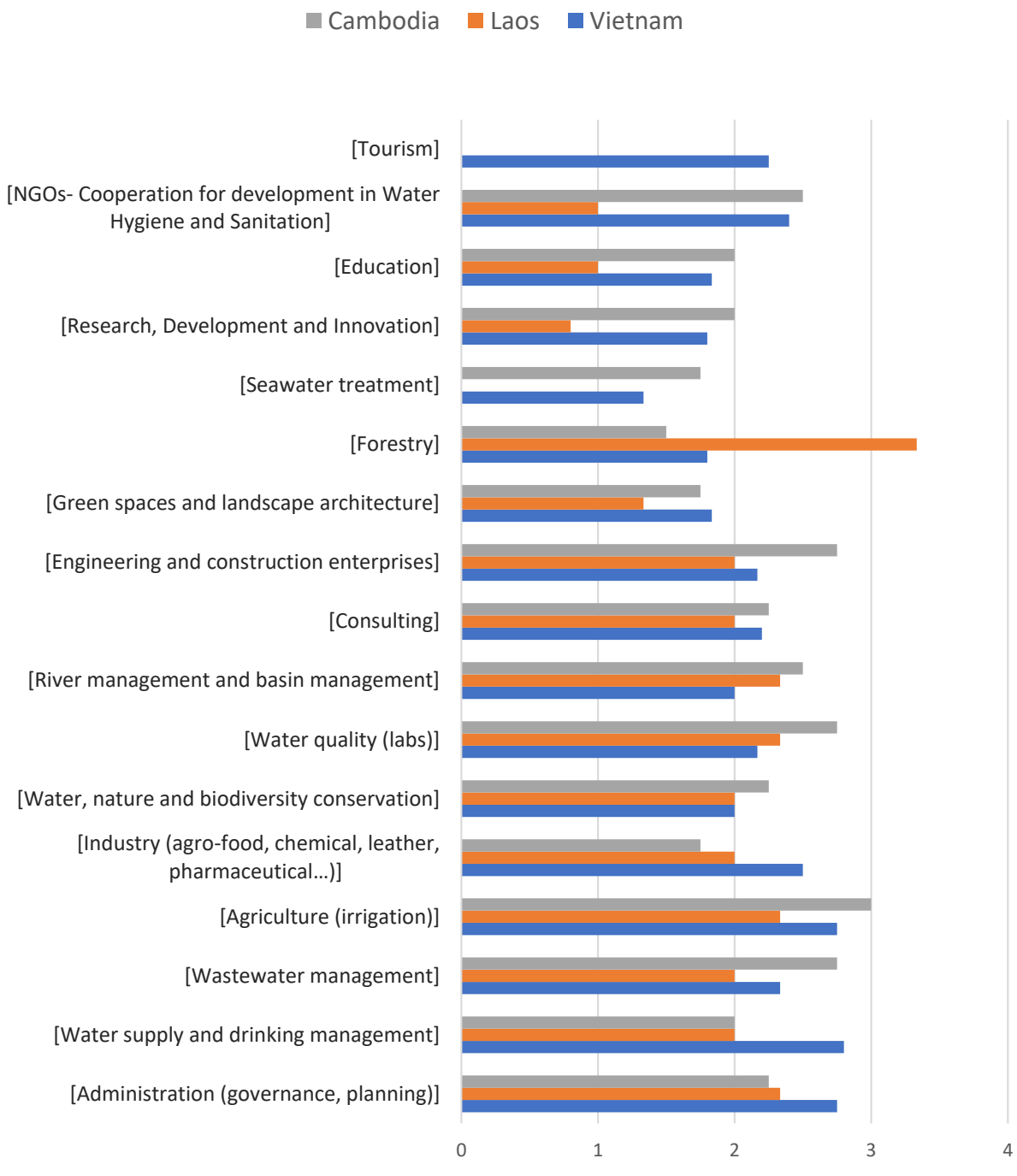
Figure 2. Percentage answers per organisation profile

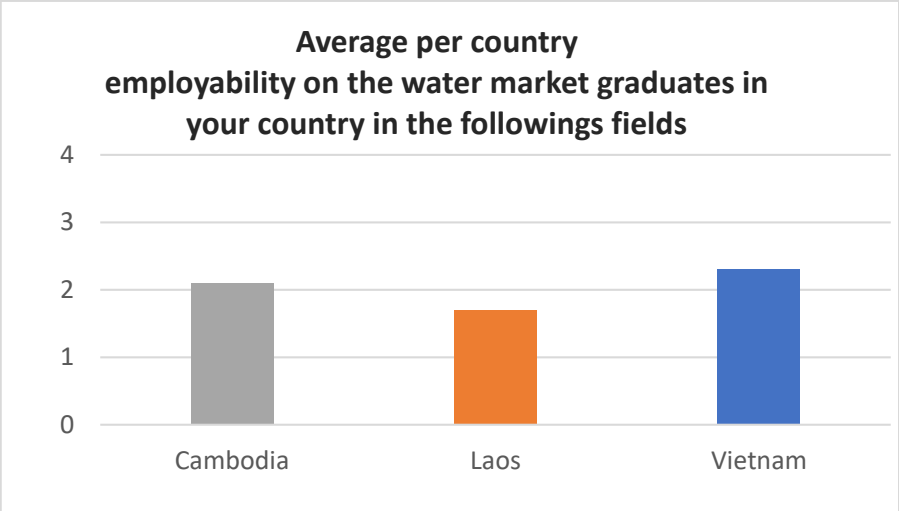
Question 1. Please rate current employability on the water market graduates in your country in the followings fields



Results per country

Please rate current employability on the water market graduates in your country in the followings fields





If some important water field is missing please describe it:

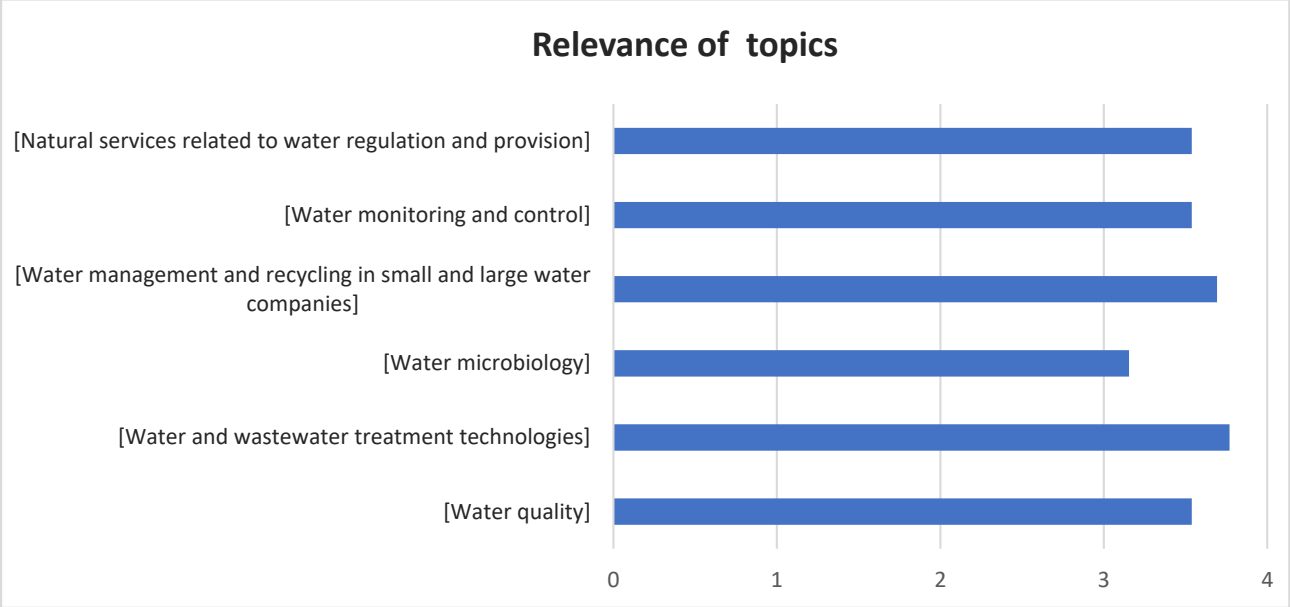
- Rainwater harvesting and local water management
- Water used for craft villages
- Hydropower, water and hydrological engineering, water resources management and planning

Question 2. We will develop multi-level formation programs in INOWASIA for the new water leading professionals in Southeast Asia countries. From your point of view, what are the sectors that will demand more water resource professionals in the future?

- Hydro power, fisheries, irrigation, navigation, urban and rural water supplies
- based on the country strategy development, the most important sectors to consider are agriculture, hydropower, industry and climate change (water balance utilization during raining and dry season)
- Wastewater treatment, drinking water production, sea water treatment, water quality
- Drinking water supply, water resources engineering, wastewater treatment technology, hydraulic engineering
- Industry and Agriculture
- Sanitation and rainwater management
- wastewater treatment, water quality
- Professionals of Water quality management
- Professionals of watershed management
- Professionals of water and wastewater treatment technologies
- Observation of water quality, wastewater treatment, water management
- Water resources management modeling
- River Basin Management
- Urban Sanitation and Planning
- Wastewater Engineering and Management

- Industrial Pollution Abatement
- Consulting, education, industry/manufacturing

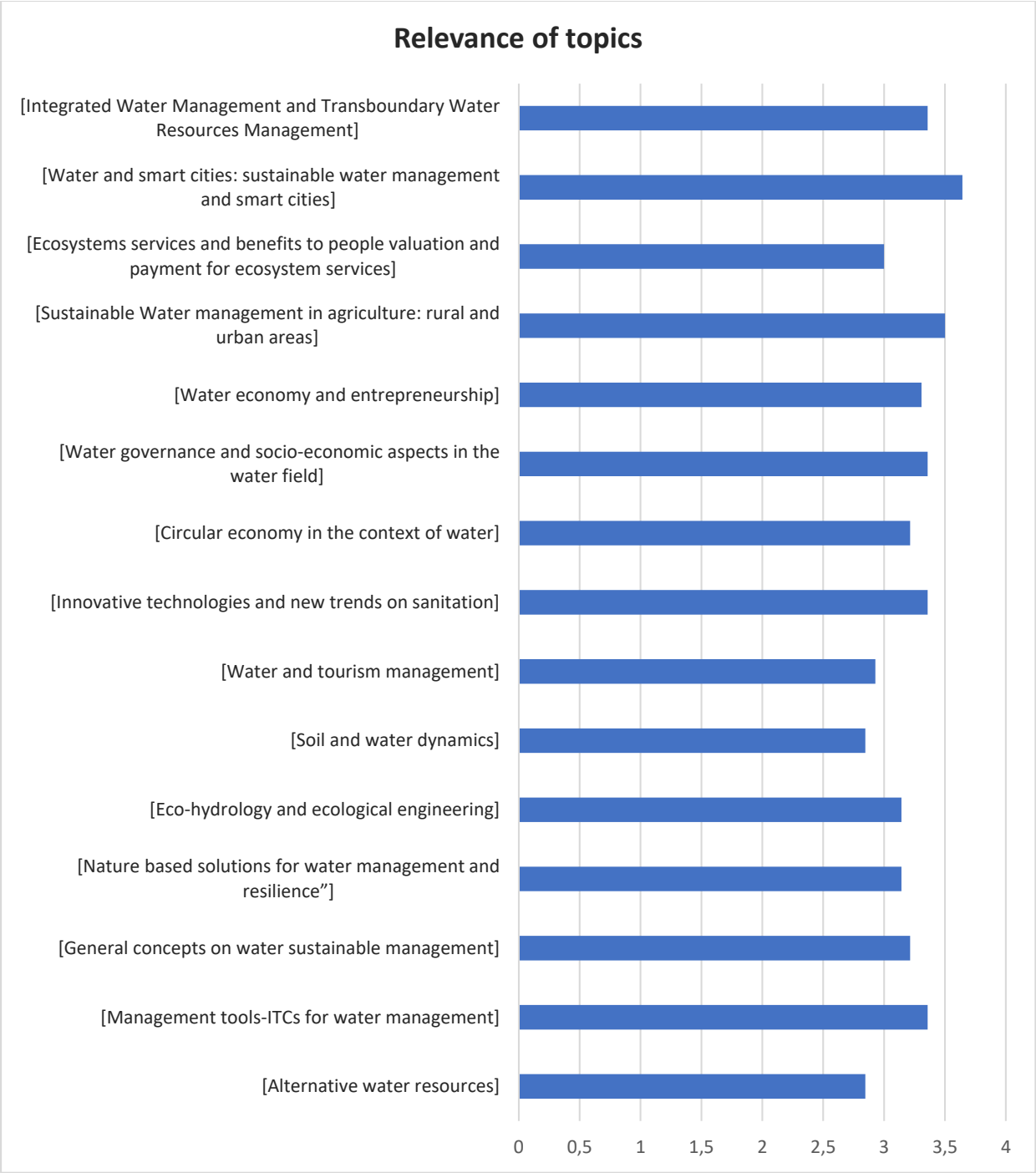
Question 3. We have defined the following basic water courses for the INOWASIA formation programs. Please rate from 0 (low) to 4 (high) the relevance in your country.



Please specify others

- Smart climate change adaptation
- Watershed management and Groundwater quality
- Water resources management and planning

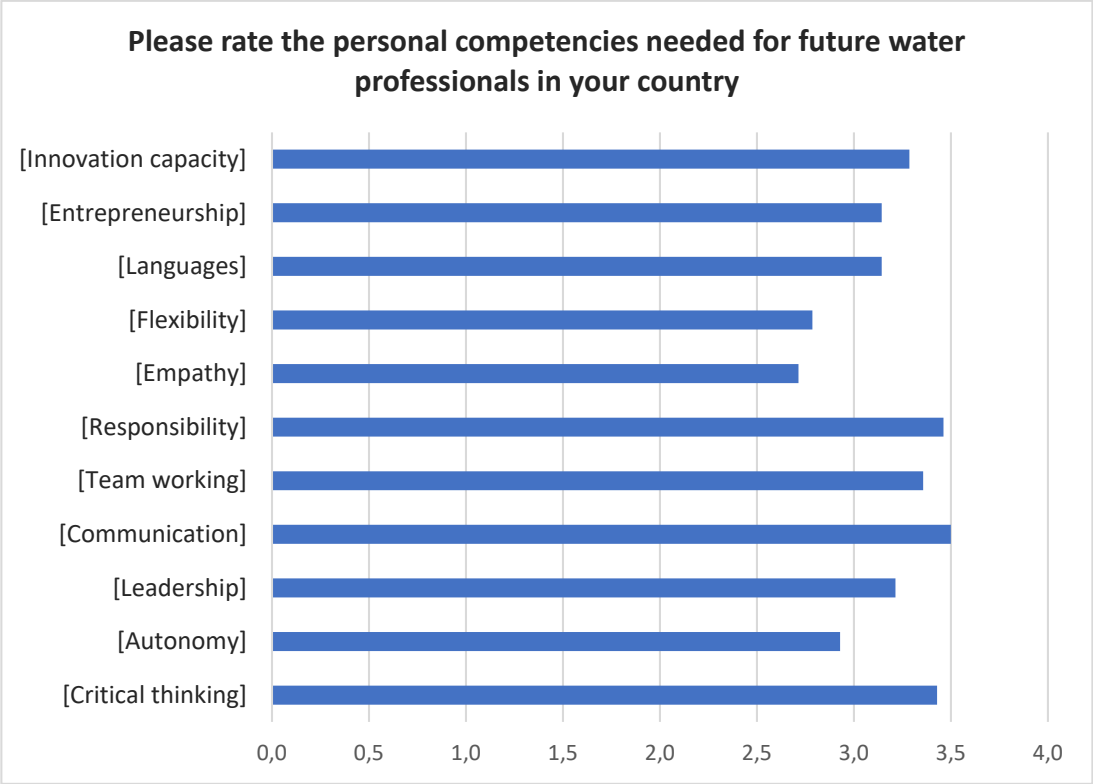
Question 4. We have defined the following advanced water courses for the INOWASIA formation programs. Please rate from 0 (low) to 4 (high) the relevance in your country.



Please specify others

- Private sector related to water management, long-term planning of water resource use,
- Community based water management
- Particular specialist English Language
- Water resources management modeling

Question 5. Please rate the personal competencies needed for future water professionals in your country



Main questionnaire outputs' related to Academic-Labour Market Competences in Cambodia, Laos and Vietnam

- Vietnam presents a slightly higher rate of employability (2,3 out of 4) on water sector, then Cambodia (2,1 out of 4) and finally Laos (1,7 out of 4).
- Vietnam presents a more diversified picture
- Cambodia main labour water fields: agriculture, water treatment, engineering
- Laos main labour water fields: forestry, agriculture, water quality, governance
- Common future needs, professionals on:
    - water quality management
    - water shed management
    - water and wastewater treatment technologies – design/performance
    - water and wastewater treatment technologies- management/operation
    - planning
    - industries (hydropower emphasised)
- All topics proposed in INOWASIA for the formation programs (basic modules) are of interest (rated 3-4) (minimum 0-maximum 4). Additional module topics are proposed: smart climate change adaptation, watershed management and groundwater quality, water resources management and planning.
- All topics proposed in INOWASIA for the formation programs (advanced modules) are of interest (rated 3-4) (minimum 0-maximum 4). Additional module topics are proposed: private sector related to water management, long-term planning of water resource use, community based water management, Particular specialist English Language, Water resources management modeling
- Competences needed from the young professionals: overall rated between 2,5 and 3,4 (range: 0: minimum- 4 maximum). The more relevant: critical thinking, communication and responsibility. Less rated competences: empathy, flexibility. No differences have been found among countries, nor by different responder's profiles (academia, enterprise, private sector, administration, NGO).