

## **The 4-Seas Initiative. Mobilizing Science Driven Sustainable Blue Growth**

Phoebe Koundouri, Athens University of Economics and Business, Greece  
Co-Chair of SDSN Greece

Nicolaos Theodossiou, Aristotle University of Thessaloniki, Greece  
Chair of SDSN Black Sea  
(corresponding author)

email: [niktheod@civil.auth.gr](mailto:niktheod@civil.auth.gr)

Division of Hydraulics & Environmental Engineering  
Dept. of Civil Engineering - Faculty of Engineering  
ARISTOTLE UNIVERSITY OF THESSALONIKI  
GR 541 24 Thessaloniki, GREECE  
Tel: +302310 995660

### **Abstract**

Global changes, especially climate change, constitute a permanent threat for the future health of the ocean and seas. Marine ecosystems degradation, pollution, and overexploitation put at risk the flows of benefits for the human health and wellbeing that depend on ocean and seas, while at the same time, ocean and human health interaction are not well studied. The project team works in four study areas: the Mediterranean Sea, the Black Sea, the Caspian Sea, and the Aral Sea and it mobilizes science driven sustainable Blue Growth and supports the implementation of the United Nations' Sustainable Development Goals, in these areas. The initiative is aligned with SDG 14 to conserve and sustainably use the oceans, seas and marine resources for sustainable development as well as with SDGs 6, 13, and 15 primarily but with almost every other SDG as well.

## The 4-seas initiative

The 4-Seas area holds historical and cultural bonds evolving and adjusting through the centuries and extending up to current times. The initiative follows a “from source to sea” approach, starting from the watersheds, including urban and rural activities, river flows and finally the seas.

The “4-Seas Initiative” aims to undertake the challenge of protecting the future state of marine ecosystems by developing a Sustainability Transition Plan in order to prevent further degradation of four large bodies of saltwater and to raise awareness of the benefits of Blue Growth. The SDSN partners comprise the two regional networks [SDSN Mediterranean](#) and [SDSN Black Sea](#) and the six national networks [SDSN Greece](#), [SDSN Italy](#), [SDSN Spain](#), [SDSN France](#), [SDSN Turkey](#) and [SDSN Russia](#).

The UN Sustainable Development Solutions Network ([SDSN](#)) has been operating since 2012 under the auspices of the UN Secretary-General. SDSN mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the Sustainable Development Goals ([SDGs](#)) and the [Paris Climate Agreement](#). The networks have already joined their forces towards the achievement of SDGs. They bring along to the initiative their extensive experience in related research and innovation as well as in education and training.

The objectives of the “4-Seas Initiative” include:

1. **RESEARCH:** To develop and support sustainable growth pathways in urban and rural areas across watersheds and coastal and marine sectors, from source to sea. To derive plans to manage the land-coastal-sea ecosystems interactions and to reduce conflicts from land-, coastal- and sea- based activities.
2. **EDUCATION:** To create common post-graduate and life-long-learning curricula focusing on the implementation of the SDGs in the 4-Seas region.
3. **DATA MANAGEMENT:** To build and maintain an open-access data repository for relevant research and innovation projects, policies and stakeholders of the 4-Seas region.
4. **INNOVATION:** To foster innovation that will enable the sustainability transition in the region of the 4-Seas through the collaboration with the Innovation Community and the EIT Climate KIC.
5. **POLICY FRAMEWORK:** The initiative is in line with the Agenda 2030 and several European Policy Initiatives and Directives and aims to develop policy alternatives that will combine their objectives and integrate the land-coastal-sea policy framework.

## The 4-seas area

The study area of the 4-seas is extremely extensive and comprises a significant part of the world.



**Figure 1.** The 4-seas area

More specifically the study area comprises the countries presented in Tables 1-4. These are the countries with direct access to the 4-seas.

**Table 1.** Mediterranean Sea (21 countries)

Country	Population	Country	Population
Spain	46,736,776	Cyprus	1,179,551
France	65,129,728	Syria	17,070,135
Monaco	38,964	Lebanon	6,855,713
Italy	60,550,075	Israel	8,519,377
Slovenia	2,078,654	Palestine	4,981,420
Croatia	4,130,304	Egypt	100,388,073
Bosnia-Herzegovina	3,301,000	Libya	6,777,452
Kosovo	1,810,366	Tunisia	11,694,719
Albania	2,880,917	Algeria	43,053,054
Greece	10,473,455	Morocco	36,471,769
Turkey	83,429,615		

**Table 2.** Black Sea (7 countries)

Country	Population	Country	Population
Bulgaria	7,000,119	Russia	145,872,256
Romania	19,364,557	Georgia	3,996,765
Moldova	4,043,263	Turkey	83,429,615
Ukraine	43,993,638		

**Table 3.** Caspian Sea (5 countries)

Country	Population	Country	Population
Russia	145,872,256	Iran	82,913,906
Kazakhstan	18,551,427	Azerbaijan	10,047,718
Turkmenistan	5,942,089		

**Table 4.** Aral Sea (2 countries)

Country	Population	Country	Population
Kazakhstan	18,551,427	Uzbekistan	32,981,716

The total population residing in the countries with direct access to the 4-seas is 892 million people, as presented in Table 5.

**Table 5.** Total population

Country	Population	Country	Population
Mediterranean Sea	517,551,117	Caspian Sea	263,327,396
Black Sea	307,700,213	Aral Sea	51,533,143
TOTAL		892,258,571	

In the estimation of the total population residing in countries with direct access to the 4-seas, the population of countries with access to more than one sea (Russia, Turkey, and Kazakhstan), was added just once. Following the concept though, “from source to sea”, one must recognize the importance and the contribution of countries occupying parts of the watersheds of large rivers who outflow into the 4-seas.

In this way one cannot ignore the countries of the Danube river, with a total population of 194,917,955 (Table 6) or the countries of the Nile, with a total population of 453,560,004 (Table 7). Other smaller rivers also outflow to one of the 4-seas. This brings the total population residing in countries with either direct or indirect access to the 4-seas to 1,361,816,576, which corresponds to almost 20% of the world population.

Figures 2, 3 and 4 respectively, present, the rivers and their watersheds of the world, the European and the African continents, demonstrating the outflows to the 4-seas. (<https://decolonialatlas.wordpress.com/2017/04/18/colorful-river-basin-maps/>)

**Table 6.** Danube river (10 countries)

Country	Population	Country	Population
Germany	83,517,045	Serbia	8,772,235
Austria	8,955,102	Romania	19,364,557
Slovakia	5,457,013	Bulgaria	7,000,119
Hungary	9,684,679	Moldova	4,043,263
Croatia	4,130,304	Ukraine	43,993,638

**Table 7.** Nile river (11 countries)

Country	Population	Country	Population
Tanzania	58,005,463	Ethiopia	112,078,730
Uganda	44,269,594	Eritrea	3,497,117
Rwanda	12,626,950	South Sudan	11,062,113
Burundi	10,864,245	Sudan	42,813,238
Congo	5,380,508	Egypt	100,388,073
Kenya	52,573,973		

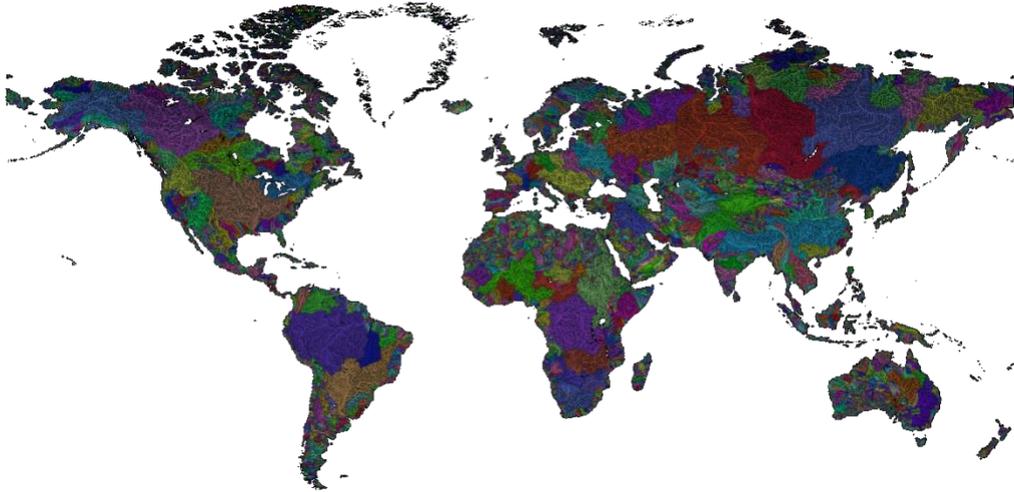


Figure 2. [Rivers and watersheds of the world](#)

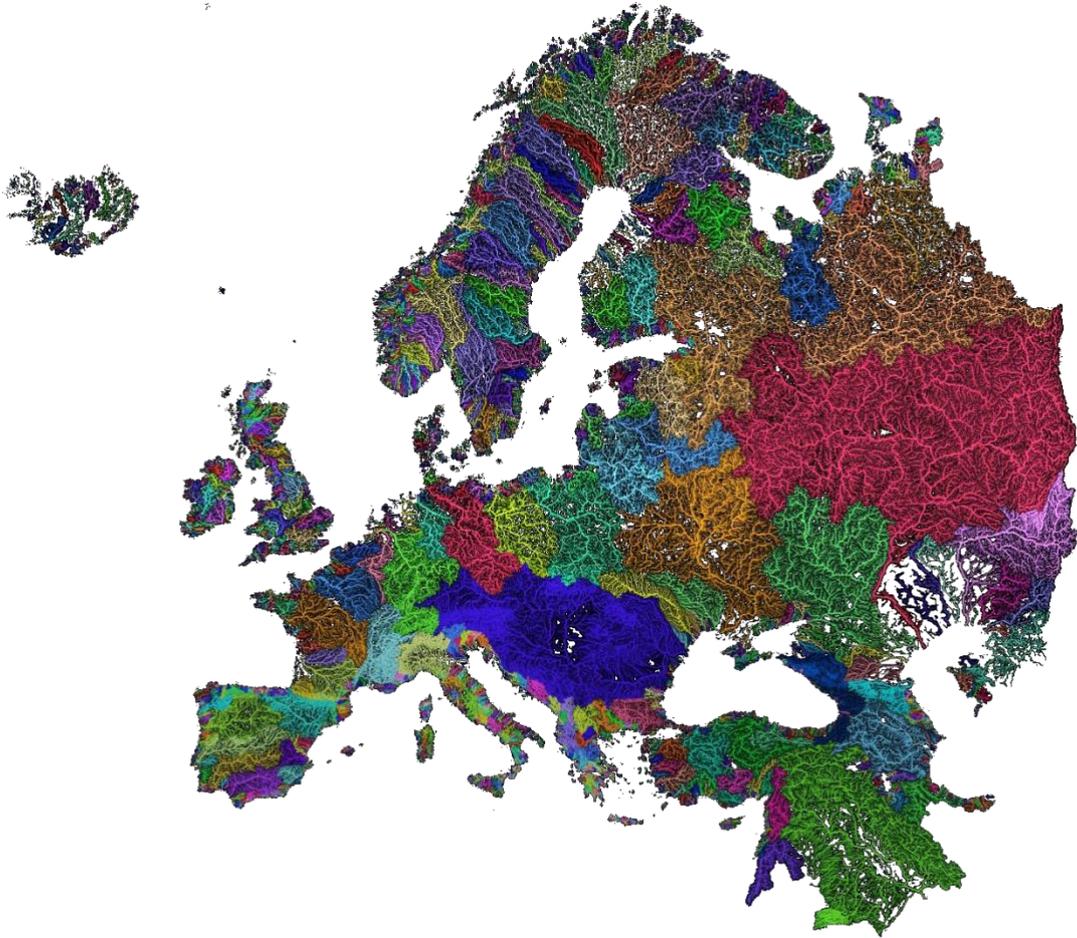
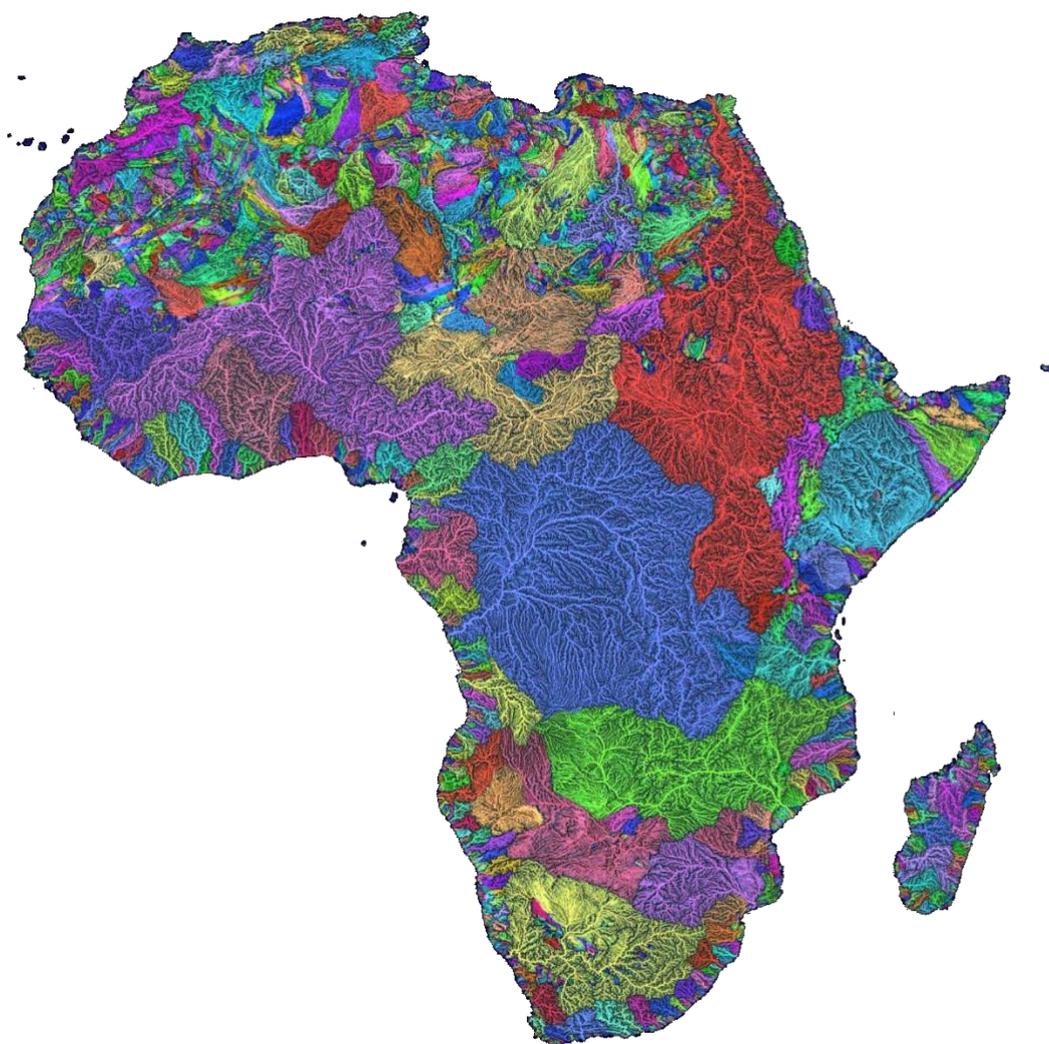


Figure 3. [Rivers and watersheds of the European continent](#)



**Figure 4.** [Rivers and watersheds of the African continent](#)

## Conclusions

It is obvious that the implementation of the Sustainable Development Goals in such a diverse area is difficult but challenging. The achievement of the objectives of the 4-seas initiative, (a) Research, (b) Education, (c) Data management, (d) Innovation and (e) policy framework is expected to have a significant impact in providing the necessary tools for the successful implementation of the SDGs.

## References

1. <http://www.sdsn-mediterranean.unisi.it/>
2. <http://sdsn-blacksea.auth.gr/>
3. <http://www.unsdsn.gr/>
4. <http://www.sdsnitalia.it/>
5. <http://reds-sdsn.es/>
6. <http://www.sdsnfrance.com/>

7. <http://unsdsn.boun.edu.tr/>
8. <https://www.ranepa.ru/eng/sdsn/sdsn-russia>
9. <https://www.unsdsn.org/>
10. <https://sdgs.un.org/goals>
11. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>
12. <https://decolonialatlas.wordpress.com/2017/04/18/colorful-river-basin-maps/>