



## Integrated Monitoring Initiative for SDG 6

Disaggregation of the SDG indicator 6.4.2 (level of water stress)  
for enhancing integrated and sustainable management of water  
resources

## 22<sup>nd</sup> International Conference of EURO-INBO

Implementation of EU water directive (WFD): the interest of integrating water, energy, food, and  
ecosystems

May 19th - 23rd, 2025, Parma, Italy



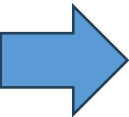
# What is the level of water stress (SDG 6.4.2)?

Definition: The ratio between total freshwater withdrawn (TFWW) by all major sectors and total renewable freshwater resources (TRWR), after having taken into account environmental flow requirements (EFR).

$$\text{Water Stress (\%)} = \frac{TFWW}{TRWR - EFR} * 100$$

## Target 6.4

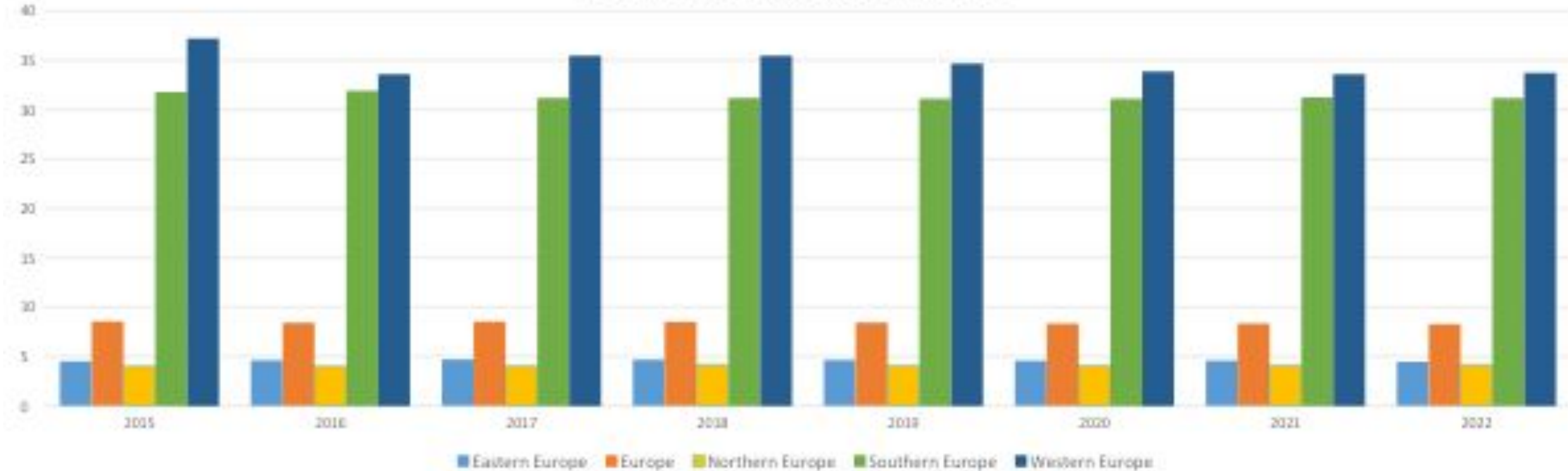
By 2030, substantially increase water-use efficiency across all sectors and **ensure sustainable withdrawals and supply of freshwater to address water scarcity** and substantially reduce the number of people suffering from water scarcity.

 Globally SDG 6.4.2 is 18.6% (year 2022) this number shows a No stress condition of the globe!



# Why is it important to disaggregate?

SDG 6.4.2 - level of water stress (%) in Europe



Data source: AQUASTAT <https://data.apps.fao.org/aquastat/?lang=en>

## Types of disaggregation:

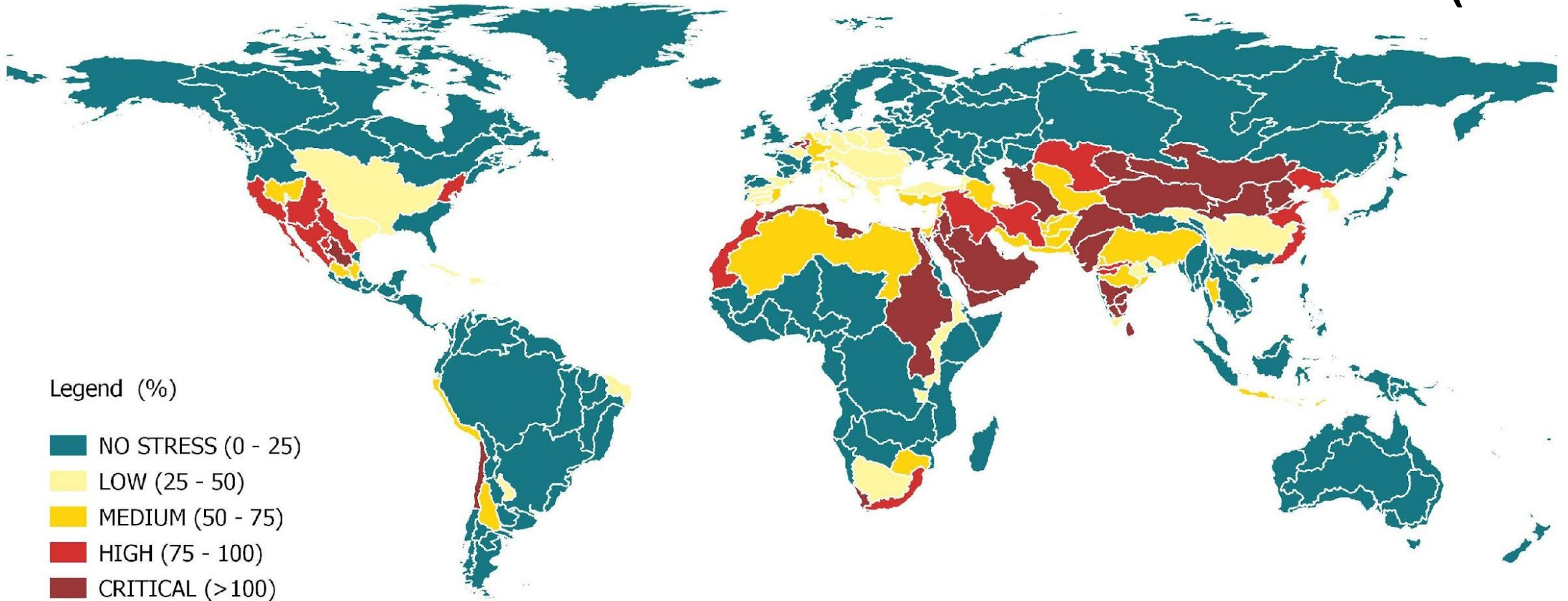
SECTORAL

SPATIAL

TEMPORAL



# Spatial disaggregation: SDG 6.4.2 by major river basin (2022)



**Disclaimer:** The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries

Source: Biancalani R. and Marinelli M. 2021.

<https://journals.uclpress.co.uk/ucloe/article/id/421/>

<https://data.apps.fao.org/aquamaps/?lang=en&share=f-94a9d7a5-3a1c-46ec-862f-57f700d0a49e>

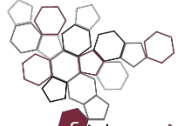


Food and Agriculture Organization  
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**ISPRA**

Istituto Superiore per la Protezione  
e la Ricerca Ambientale



Sistema Nazionale  
per la Protezione  
dell'Ambiente



**Istat**

Istituto Nazionale  
di Statistica

## AREA OF STUDY

- Italy (entire country)

## Disaggregation UNIT

- River basin districts defined according to the EU Water Framework Directive 2000/60/EC

## REFERENCE PERIODS

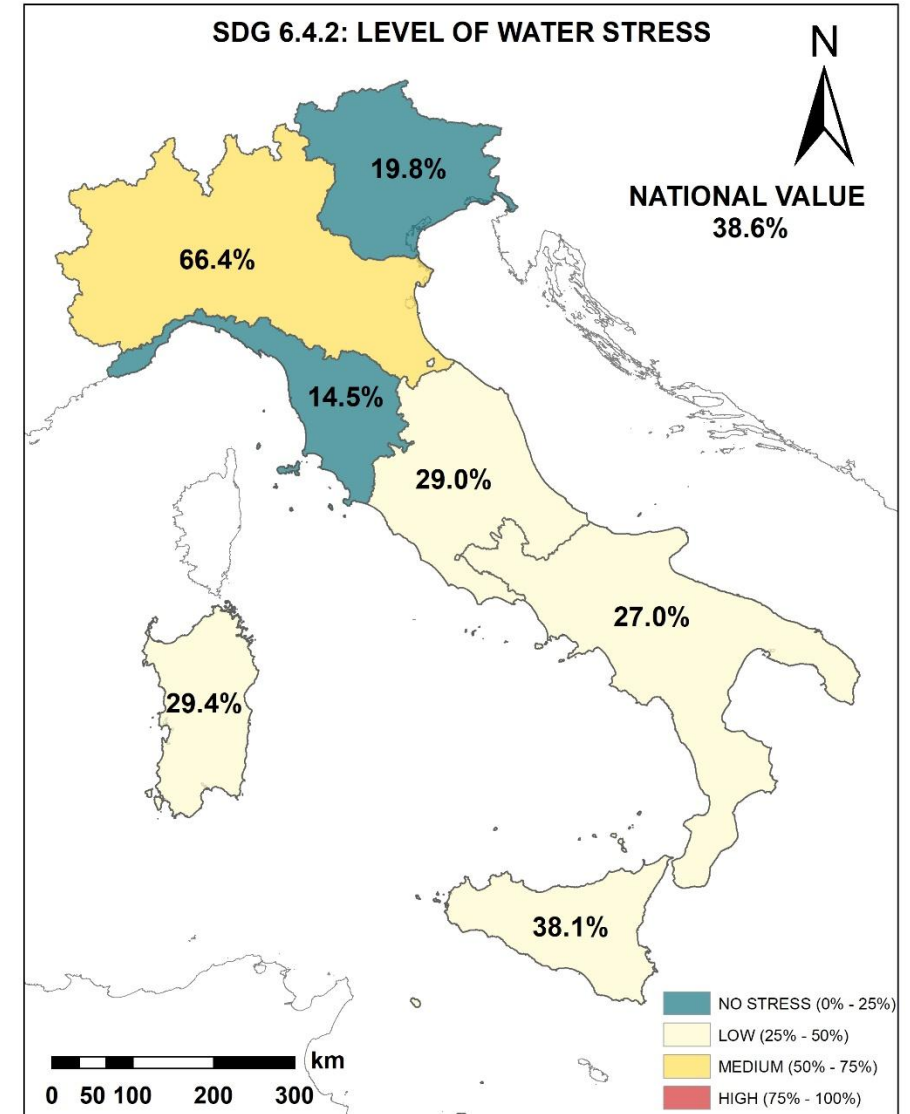
- The analysis was performed considering the available freshwater resources during the different 30-year periods within the reference period 1951–2020 and the water withdrawal for the period 2015–2019.

## TOOLS

- National model BIGBANG 5.0 (ISPRA) to assess the Total Renewable Freshwater Resources (TRWR)  
[https://groupware.sinanet.isprambiente.it/bigbang-data/library/bigbang\\_60](https://groupware.sinanet.isprambiente.it/bigbang-data/library/bigbang_60)
- Water Withdrawal data disaggregated for the Services, Agriculture and Industry sectors, applying national methodologies (ISTAT)

<https://openknowledge.fao.org/items/44b8ff33-ceee-4661-a1d9-ac5c94d0eede>

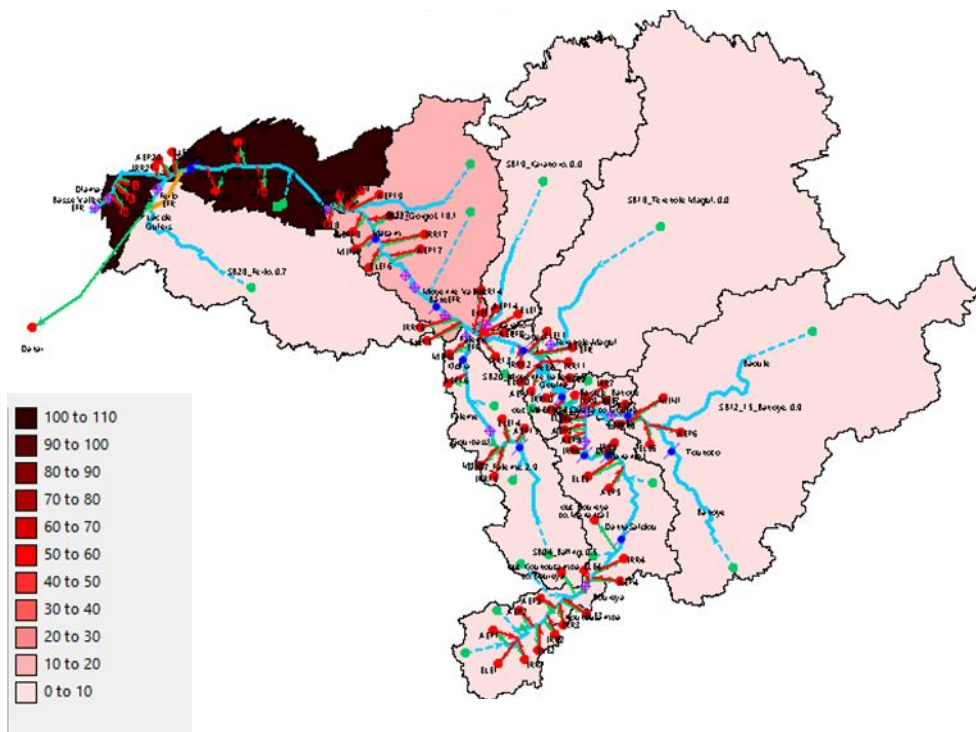
# Spatial disaggregation: Italy



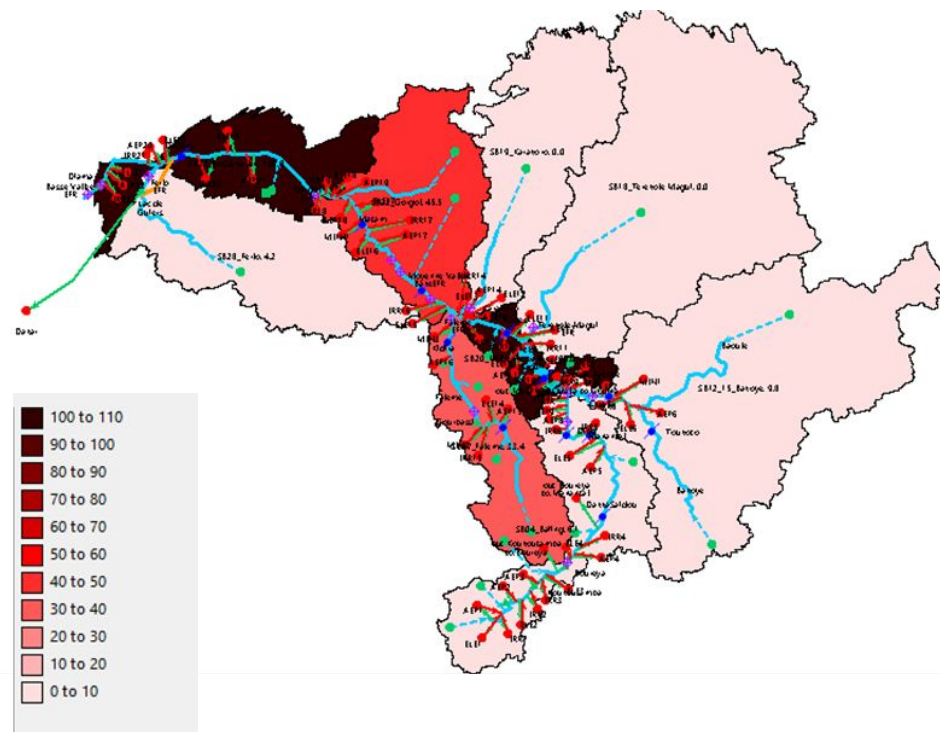
TRWR refer to 1991–2020 and water withdrawal data refer to 2015



# Temporal disaggregation: Senegal river basin (Senegal, Mauritania, Mali, Guinea)



Wet season (July – October)



Dry season (November – June)

**METHODOLOGY PUBLISHED TODAY!**

<https://www.mdpi.com/2073-4441/17/10/1543>

Water Evaluation And Planning



<https://www.weap21.org/>



- Start collecting SDG 6.4.2 data by basin in all the countries through AQUASTAT (FAO global information system on water resources and agricultural water management)
- Implement the spatial and temporal disaggregation of the SDG 6.4.2 at sub-basin level using the FAO methodology in other river basins, including **European basins**.
- Show the impact of monitoring the **SDG 6.4.2 at policy level** and how the disaggregation supports the implementation of national integrated water management policies
- Improve the assessment of the **environmental flows** at basin and sub-basin scale investigating different methods and tools depending on data and resources available in the countries
- Strengthen countries' capacity to measure and monitor **groundwaters** (supplies and use)



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SUSTAINABLE  
DEVELOPMENT GOALS

# Thanks for your attention

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