AQUA FONS VITAE

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Dicastery for Promoting
Integral Human Development

Aqua fons vitae

Valuing and caring for a common good: Water

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FOREWORD

"Therefore you will joyously draw water from the springs of salvation."
Isaiah 12:3

Pope Francis' view of the signs of the times has been teaching us for ten years now not to lose hope, albeit through a dramatic epochal change. At the beginning of the Encyclical *Laudato si'* he points to "the greatness, urgency and beauty of the challenge before us," steering us away from the temptations of resignation and catastrophism.

Against this backdrop, the five webinars that took place in March 2021 – beginning with World Water Day – allowed us to remember and appreciate the vast and interconnected nature of our water challenges. The Encyclical itself refers to them as early as Nos. 20-27, demonstrating the realism that commits Christian hope to awareness and action. We are pleased to finally publish the contributions of those who – whether as moderator or speaker – agreed to provide a text to be included in this volume. There are many who have responded to the invitation of the Dicastery for Promoting Integral Human Development, as well as their home institutions, to collaborate: our warmest thanks to each of them.

The polyphonic character of this collection appropriately corresponds to a concern that has been lucidly expressed by the Holy Father: "The fragmentation of knowledge proves helpful for concrete applications, and yet it often leads to a loss of appreciation for the whole, for the relationships between things, and for the broader horizon, which then becomes irrelevant. This very fact makes it hard to find adequate ways of solving the more complex problems of today's world, particularly those regarding the environment and the poor; these problems cannot be dealt with from a single perspective or from a single set of interests." (*Laudato si'*, 110). In the light of his Magisterium and the document *Aqua fons vitae*, the following reflections can serve as further insight for consultation and engagement.

In too many places "sister water" is still dangerously polluted, disputed, irresponsibly wasted, or used for priorities that do not correspond to human dignity and do not contribute to the protection of life on Earth. At the recent World Water Forum in Senegal, the Holy See recalled that "today more than

two billion people are deprived of access to clean water and/or sanitation. Let us think of all the concrete consequences that this can have, particularly for patients in health centers, for women giving birth, for prisoners, refugees, and displaced persons."

Let us therefore make our own the appeal addressed to the Forum participants by Cardinal Pietro Parolin on behalf of the Holy Father: an "appeal to all political and economic leaders and managers, to the various administrations, and to those who are in a position to direct research, financing, education and the exploitation of natural resources and of water in particular, so that they may have at heart to worthily serve the common good with determination, integrity and in a spirit of cooperation." In this way, we will advance toward a world of solidarity, responsibility, and sustainability, and above all, peace, with the hope that everyone can finally joyously draw water for their own integral development, singing the wonders of the Lord, as Isaiah suggested, and taking care of it.

Cardinal Michael Czerny S.J.
Sister Alessandra Smerilli F.M.A.
4 October 2022

PRÉFACE

« Dans l'allégresse vous puiserez de l'eau aux sources du salut »
Isaïe 12 : 3

Le regard du pape François sur les signes des temps nous éduque désormais depuis dix ans à ne pas perdre l'espoir, même dans un changement d'époque dramatique. Au début de l'Encyclique *Laudato si'*, il souligne « la grandeur, l'urgence et la beauté du défi qui se présente à nous », nous éloignant des tentations de la résignation et du catastrophisme.

Dans ce contexte, les cinq webinaires qui ont eu lieu en mars 2021 – en commençant par la Journée Mondiale de l'Eau – ont permis de rappeler et d'apprécier l'ampleur et l'interconnexion particulières des défis liés à l'eau. L'Encyclique elle-même y fait référence dès les numéros 20-27, démontrant le réalisme qui engage l'espérance chrétienne dans la prise de conscience et dans l'action. Nous sommes heureux de publier enfin les contributions de qui – modérateur ou intervenant – a accepté de fournir un texte à inclure dans ce volume. Nombreux sont ceux qui ont répondu à l'invitation du Dicastère pour le Service du Développement Humain Intégral et de leurs institutions à collaborer : à chacun et chacune nos chaleureux remerciements.

Le caractère polyphonique de ce recueil correspond de façon adéquate à une préoccupation exprimée avec lucidité par le Saint-Père : « La fragmentation des savoirs sert dans la réalisation d'applications concrètes, mais elle amène en général à perdre le sens de la totalité, des relations qui existent entre les choses, d'un horizon large qui devient sans importance. Cela même empêche de trouver des chemins adéquats pour résoudre les problèmes les plus complexes du monde actuel, surtout ceux de l'environnement et des pauvres, qui ne peuvent pas être abordés d'un seul regard ou selon un seul type d'intérêts » (*Laudato si'*, 110). A la lumière de son Magistère et du document *Aqua fons vitae*, les réflexions suivantes peuvent constituer un éclairage supplémentaire pour la consultation et l'engagement.

Dans de trop nombreux endroits, « sœur eau » est encore gravement polluée, objet de disputes, gaspillée de manière irresponsable ou utilisée selon des priorités qui ne correspondent pas à la dignité humaine et ne contribuent pas à la protection de la vie sur Terre. Lors du récent Forum Mondial de l'Eau,

au Sénégal, le Saint-Siège a rappelé que : « 2 milliards de personnes se voient privées d'un accès à l'eau potable et/ou à l'assainissement. Pensons à toutes les conséquences concrètes que cela peut avoir, en particulier pour les patients dans les centres de santé, pour les femmes en travail, pour les prisonniers, les réfugiés et les déplacés ».

Faisons donc nôtre l'appel adressé aux participants du Forum par le cardinal Pietro Parolin au nom du Saint-Père : un « appel à tous les responsables et dirigeants politiques, économiques, aux diverses administrations, à ceux qui sont en mesure d'orienter la recherche, les financements, l'éducation et l'exploitation des ressources naturelles et de l'eau en particulier, afin qu'ils aient à cœur de servir dignement le bien commun, avec détermination, intégrité et dans un esprit de coopération ».

Ainsi, nous avancerons vers un monde de solidarité, de responsabilité et de durabilité, et surtout de paix. En espérant qu'enfin chacun puisse puiser de l'eau avec joie pour son propre développement intégral, en chantant les merveilles du Seigneur, comme le suggérait Isaïe, et en en prenant soin.

Cardinal Michael Czerny S.J.
Sœur Alessandra Smerilli F.M.A.
4 octobre 2022

PREFACIO

«Sacaréis agua con gozo de las fuentes de la salvación»
Isaías 12:3

La mirada del papa Francisco sobre los signos de los tiempos nos enseña, desde hace diez años, a no perder la esperanza, ni siquiera ante un dramático cambio de época. Al comienzo de la Encíclica *Laudato si'* señala «la grandeza, la urgencia y la hermosura del desafío que se nos presenta» alejándonos de las tentaciones de la resignación y del catastrofismo.

En este contexto, los cinco seminarios web que tuvieron lugar en marzo de 2021 – comenzando con el Día Mundial del Agua – sirvieron para recordar y apreciar lo vastos e interconectados que son especialmente los desafíos del agua. La misma Encíclica se refiere a ellos ya en los párrafos 20-27, demostrando el realismo que compromete la esperanza cristiana en la toma de conciencia y en la acción. Nos complace publicar finalmente las contribuciones de quienes – moderadores o ponentes – aceptaron aportar un texto para su inclusión en este volumen. Son muchos los que han respondido a la invitación del Dicasterio para el Servicio del Desarrollo Humano Integral y de sus instituciones a colaborar: a todos y a todas nuestro más sincero agradecimiento.

El carácter polifónico de esta colección responde adecuadamente a una preocupación claramente expresada por el Santo Padre: «La fragmentación de los saberes cumple su función a la hora de lograr aplicaciones concretas, pero suele llevar a perder el sentido de la totalidad, de las relaciones que existen entre las cosas, del horizonte amplio, que se vuelve irrelevante. Esto mismo impide encontrar caminos adecuados para resolver los problemas más complejos del mundo actual, sobre todo del ambiente y de los pobres, que no se pueden abordar desde una sola mirada o desde un solo tipo de intereses» (*Laudato si'*, 110). A la luz de su Magisterio y del documento *Aqua fons vitae*, las siguientes reflexiones pueden servir como una perspectiva adicional para la consulta y el compromiso.

Todavía en demasiados lugares la "hermana agua" está gravemente contaminada, es objeto de disputas, se derrocha irresponsablemente o es utilizada según prioridades que no corresponden a la dignidad humana ni contribuyen a proteger la vida en la Tierra. En el reciente Foro Mundial del Agua celebrado

en Senegal, la Santa Sede recordó que «en la actualidad, más de dos mil millones de personas carecen de acceso al agua potable y/o al saneamiento. Pensamos en todas las consecuencias concretas que esto puede tener, especialmente para los pacientes de los centros sanitarios, para las mujeres que da a luz, para los presos, los refugiados y las personas desplazadas».

Por tanto, hagamos nuestro el llamamiento dirigido a los participantes en el Foro por el cardenal Parolin en nombre del Santo Padre: un «llamamiento a todos los responsables y dirigentes políticos y económicos, a las diversas administraciones y a todos aquellos que dirigen la investigación, la financiación, la educación y la explotación de los recursos naturales y del agua en particular, para que tengan en el corazón servir dignamente al bien común, con determinación, integridad y espíritu de cooperación». De esta manera avanzaremos hacia un mundo solidario, responsable y sostenible y, sobre todo, de paz. Con la esperanza de que todos puedan por fin sacar agua con alegría para su propio desarrollo integral, cantando las maravillas del Señor, como sugería Isaías, y cuidándola.

Cardenal Michael Czerny S.J.
Hermana Alessandra Smerilli F.M.A.
4 de octubre 2022

PREFAZIONE

«Attingerete acqua con gioia alle sorgenti della salvezza»
Isaia 12:3

Lo sguardo di papa Francesco ai segni dei tempi ci educa da ormai dieci anni a non perdere la speranza, seppure in un drammatico cambiamento d'epoca. All'inizio dell'Enciclica *Laudato si'* egli indica «la grandezza, l'urgenza e la bellezza della sfida che ci si presenta», allontanandoci dalle tentazioni della rassegnazione e del catastrofismo.

Su questo sfondo, i cinque webinar che si sono svolti nel marzo 2021 – iniziando con la Giornata Mondiale dell'Acqua – hanno consentito di ricordare e di apprezzare quanto vaste e interconnesse siano, in particolare, le sfide idriche. Ad esse la stessa Enciclica fa riferimento sin dai numeri 20-27, dimostrando il realismo che impegna alla consapevolezza e all'azione la speranza cristiana. Siamo lieti di pubblicare finalmente i contributi di chi – moderatore o relatore – ha accettato di fornire un testo da inserire in questo volume. Sono molti coloro che hanno risposto all'invito del Dicastero per il Servizio dello Sviluppo Umano Integrale e delle loro istituzioni di appartenenza a collaborare: a tutte e tutti il nostro caloroso ringraziamento.

Il carattere polifonico di questa raccolta corrisponde adeguatamente a una preoccupazione espressa con lucidità dal Santo Padre: «La frammentazione del sapere assolve la propria funzione nel momento di ottenere applicazioni concrete, ma spesso conduce a perdere il senso della totalità, delle relazioni che esistono tra le cose, dell'orizzonte ampio, senso che diventa irrilevante. Questo stesso fatto impedisce di individuare vie adeguate per risolvere i problemi più complessi del mondo attuale, soprattutto quelli dell'ambiente e dei poveri, che non si possono affrontare a partire da un solo punto di vista o da un solo tipo di interessi» (*Laudato si'*, 110). Alla luce del suo Magistero e del documento *Aqua fons vitae*, le riflessioni che seguono possono essere un ulteriore approfondimento per la concertazione e l'impegno.

Ancora in troppi luoghi "sorella acqua" è gravemente inquinata, contesa, sprecata irresponsabilmente, o usata in base a priorità che non corrispondono alla dignità umana e non contribuiscono alla protezione della vita sulla Terra. In occasione del recente Forum Mondiale dell'Acqua, svoltosi in Senegal, la

Santa Sede ha ricordato che «oggi più di due miliardi di persone si vedono private di un accesso all'acqua potabile e/o ai servizi igienici. Pensiamo a tutte le conseguenze concrete che ciò può avere, in particolare per i pazienti dei centri sanitari, per le donne partorienti, per i prigionieri, i rifugiati e gli sfollati».

Facciamo dunque nostro l'appello rivolto ai partecipanti al Forum dal cardinale Pietro Parolin a nome del Santo Padre: un «appello a tutti i responsabili e i dirigenti politici, economici, alle diverse amministrazioni e a quanti sono in grado di orientare la ricerca, i finanziamenti, l'educazione e lo sfruttamento delle risorse naturali e dell'acqua in particolare, affinché abbiano a cuore di servire degnamente il bene comune, con determinazione, integrità e con spirito di cooperazione». Così avanzeremo verso un mondo solidale, di responsabilità e sostenibilità, e soprattutto di pace. Sperando che finalmente tutti possano attingere acqua con gioia per il proprio sviluppo integrale, cantando le meraviglie del Signore, come suggerì Isaia, e avendone cura.

Cardinale Michael Czerny S.J.
Suor Alessandra Smerilli F.M.A.
4 ottobre 2022

22 MARCH 2021 – WORLD WATER DAY – "WATER AND INTEGRAL ECOLOGY"

A public conversation inspired by *Aqua fons vitae*

A webinar organized by the Dicastery for Promoting Integral Human Development in collaboration with the Federation of Asian Bishops' Conferences (FABC) – Office of Human Development/ Climate Change Desk (OHD/CCD)

Opening prayer: Fr. William LaRousse, Assistant Secretary General of the FABC.

Welcome to the participants: H.E. Bishop Yvon Ambroise, Chairman of the FABC's Office of Human Development/Climate Change Desk (OHD/CCD).

Context of the webinar: Mr. Tebaldo Vinciguerra, Official of the Dicastery for Promoting Integral Human Development (DPIHD).

Introducing the moderator and the panelists: Fr. Joseph Gonsalves, Executive Secretary, FABC-OHD/CCD.

Moderator: H.E. Bishop Allwyn D'Silva, Auxiliary Bishop of Mumbai, Secretary of the FABC-OHD/CCD.

Panelists: Prof. Luke Gabriel Mendes, Faculty in St. Xavier engineering and technical institute, Bombay, and founder of the Bombay's Indigenous Peoples Association.

Ms. Rowena Soriaga, Steering Committee Member, River Above Asia and Oceania Ecclesial Network.

Ms. Panchali Saikia, Programme Officer in the Sanitation and Water Department, Stockholm International Water Institute.

Sr. Alphonsa Kiven, Member of the General Council, Tertiary Sisters of St. Francis.

Concluding remarks: Mons. Bruno-Marie Duffé, Secretary of the DPIHD.

Thanks on behalf of the organizers: Ms. Deepika Singh, Project Coordinator, FABC-OHD/CCD.

Final Blessing: H.E. Bishop Narui Daisuke, Bishop of Niigata, Vice-President of Caritas Japan.

23 DE MARZO 2021 – "AGUA Y DESARROLLO HUMANO INTEGRAL"

Una conversación pública inspiradas por *Aqua fons vitae*
Un webinar organizado por el Dicasterio para el Servicio del Desarrollo Humano Integral en colaboración con Catholic Relief Services (CRS)

Oración inicial: Hermana Daniela Cannavina, Secretaria General, Confederación Latinoamericana y Caribeña de Religiosas y Religiosos.

Bienvenida: Mons. Segundo Tejado Muñoz, Sub-Secretario del Dicasterio para el Servicio del Desarrollo Humano Integral (DSDHI).

Moderadora: Sra. Margarita Marroquín Parducci, Coordinadora de comunicaciones para el Programa regional Agua y Suelo de CRS en El Salvador.

Panelistas: Ing. Pablo Martinez de Anguita, Profesor en la Universidad Rey Juan Carlos de Madrid, Director del Instituto *Laudato si'* del Arzobispado de Granada.
Ing. Gabriela Sacco, Directora Ejecutiva de la Catedra del Dialogo y la Cultura del Encuentro.
Ing. Carlos Aguilar Delfin, Director global de la iniciativa Azure de CRS.
Sr. Gonzalo Sales Genovés, Director de la Fundación Juan Ciudad ONGD.
Conclusión: Sr. Tebaldo Vinciguerra, Oficial del DSDHI, Sector "Ecología y Creación". Cierre: Mtro. Omar Arnulfo Serrano, Vicerrector de la UCA (Universidad Centroamericana José Simeón Cañas).

24 MARS 2021 – "EAU ET DÉVELOPPEMENT HUMAIN INTÉGRAL"

Une conversation publique inspirée par *Aqua fons vitae*
Un webinaire organisé par le Dicastère pour le Service du Développement Humain Intégral en collaboration avec l'alliance CIDSE
Un évènement "Road to Dakar" organisé en vue du 9ème Forum Mondial de l'Eau

Prière initiale : Mme. Axelle Fischer, Secrétaire générale d'Entraide et Fraternité.

Bienvenue et introduction : S.Em. le Cardinal Silvano Maria Tomasi, Dicastère pour le Service du Développement Humain Intégral (DSDHI), Délégué Spécial du Saint-Siège auprès l'Ordre Souverain de Malte.

Modératrice : Mme. Josianne Gauthier, Secrétaire générale de CIDSE.

Conférenciers : Ing. Abdoulaye Sene, Secrétaire exécutif et Co-président du comité préparatoire de l'organisation du 9ème Forum Mondial de l'Eau de Dakar.

Ing. Fadi G. Comair, Président du Conseil Intergouvernemental du Programme Hydrologique International de l'UNESCO et Président de l'association Medurable.

M. Henri Muhiya, Secrétaire exécutif de la Commission épiscopale pour les ressources naturelles de la Conférence épiscopale de République Démocratique Congo et Membre du DSDHI.

Mme. Kelly Di Domenico, Directrice de la Communication, Développement et Paix / Caritas Canada.

Clôture du webinaire : M. Tebaldo Vinciguerra, Officiel de la Section "Ecologie et Création" au sein du DSDHI, et Mme. Josianne Gauthier.

25 MARCH 2021 – "CARING FOR THE OCEANS"

A public conversation inspired by *Aqua fons vitae*
A webinar organized by the Dicastery for Promoting Integral Human Development in collaboration with the Embassies of Australia, Italy and Monaco to the Holy See

Opening prayer: Deacon Joseph O'Donnell, Senior Regional Port Chaplain, Stella Maris.

Welcome and introduction: Fr. Augusto Zampini Davies, Adjunct Secretary of the Dicastery for Promoting Integral Human Development (DPIHD).

Moderator: Mr. Alessandro Lovatelli, Aquaculture Officer, FAO Aquaculture Branch.

Panelists: Ms. Amelia Ma'afu, Director of Caritas Tonga, in representation of Caritas Oceania.

Dr. Stuart Minchin, Director General of the Pacific Community.

Dr. Antonio Di Natale, Secretary General of Fondazione Acquario di Genova, Member of numerous international working groups in the field of fisheries.

Dr. Hervé Raps MD, Co-Director of the WHO Collaborating Center for Health and Sustainable Development at the Centre Scientifique de Monaco.

Closing: H.E. Chiara Porro, Australian Ambassador to the Holy See.

Mr. Tebaldo Vinciguerra, Official, Sector "Ecology and Creation" of the DPIHD.

26 MARCH 2021 – "WATER GOVERNANCE FOR PEACE"

A public conversation inspired by *Aqua fons vitae*
A Side Event of the OECD Water Days 2021

Welcome and introduction: Cardinal Silvano Maria Tomasi, Dicastery for Promoting Integral Human Development (DPIHD) and Special Delegate of the Holy See to the Sovereign Military Order of Malta.

Moderator: Mr. Tebaldo Vinciguerra, Official, Sector "Ecology and Creation", DPIHD.

Panelists: Prof. Luigino Bruni, Full Professor Political Economy and Coordinator of the PhD Programme in Civil Economy, LUMSA University, Rome, and Scientific Director of the event "Economy of Francesco".

Eng. Olcay Ünver, Professor of Practice, Ira A. Fulton Schools of Engineering, Polytechnic School, Environmental and Resource Management Program, Arizona State University, and former Vice-Chair of UN-Water.

Mr. Gidon Bromberg, Israel Director of EcoPeace Middle East.

Dr. Martina Klimes, Water and Peace Advisor, Stockholm International Water Institute.

Ms. Oriana Romano, Head of Unit, Water Governance and Circular Economy, Centre for Entrepreneurship, SMEs, Regions and Cities, OECD.

Closing: Fr. Joshtrom Kureethadam, Coordinator, Sector "Ecology and Creation", DPIHD, and Professor of Philosophy of Science and Director of the Institute of Social and Political Sciences at the Salesian Pontifical University, Rome.

WATER – NOT JUST A HUMAN RIGHT, BUT A RIGHT OF ALL BIOTIC AND ABIOTIC SENTIENT SYSTEMS ON MOTHER EARTH

Prof. Luke Gabriel Lily Mendes

Professor heading two post-graduation one year programs ("Arts and Humanities" & "Nature Consciousness") at St. Xavier's Technical and Engineering Institute (Mahim West, Bombay, India) and also the St. Xavier's Tech Innovation and Incubation Centre.

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Keywords: environment, degradation, water wars, resource wars, mismanagement by governments, industrial revolution, water, justice for all creatures, water for all creatures, universal declaration of rights for all creatures, trustees, heart, nature consciousness, going back to our roots, and change of heart.

1. Introduction

Water is what gives life to all who inhabit this planet, bugs, bees, snakes, cockroaches and all other species who have a function in the whole, us humans too share this planet with them. Without water life won't exist on this planet. Yes, we have heard this so many times, that we think of this as a slogan on a public bus or a hoarding by the so-called government in any country for that matter. We appoint the government with the expectation that sets a mandate for all, humans and the environment. But the governments carry on their own agenda and are responsible for this current mess the world is in. The one world government is a great suggestion at this juncture of crisis. How difficult is it, to not divert natural resources to corporations for personal profit? How difficult is it, to not kill the forests for development projects that favour the few businessmen who paid for the political campaign and other tomfoolery of the political parties who form government? How difficult is it, to offer justice to those who have elected the governments in office? How difficult is it, to protect the country's natural resources, be it flora, fauna, rivers, oceans? How difficult is it, to not displace and not kill those protecting those very natural resources and who are living in harmony with the earth for the collective whole – the Indigenous peoples? It's not that hard. Because all it takes is

integrity and a sense of collective morality. A sense moral authority is lacking in government, corporations, religious institutions, and civil society. They are functioning on a basic level of consciousness – based on the 3 core drives. What do we do, when we see that a few are going to kill the collective whole? What do we do, knowing that an entire planet and her systems are going to be extinct because of a few? Do we fall back on political correctness and doing what is *kind* instead of what is *right*, even when we know that those governing us are going to take down an entire planet and its species that took 4.5 billions years to form? What do we do? How do we implement "The Universal Declaration of Human Rights" (UDHR) as set by the UN (General Assembly resolution 217 A).

How do we extend this Universal Declaration to all other creatures and natural systems on our planet? How about we consider the right to resources, a right belonging to all sentient creatures too? Why not? They were here before us, and they are responsible for maintaining the order of things so far, until we humans came along.

2. Humans Are Trustees of Creation or Caretakers of All That Exists on Mother Earth

Why us, and not elephants or lions? Because we have *collectively* dominated all terrains and environments and have taken for ourselves, without a care. We have created our own destructive worlds in this beautiful world. What went wrong and what are the consequences of it? Imminent extinction of all species including us, on this planet. We are currently out of control. It is our moral obligation to put things back in order. Why? Because we can, because we *ought* to.

We are aware that water is what makes this planet thrive. Either water came here as an ice comet along with the foundations of life, and over time life flourished, or all of this was created in the metaphorically mystical 6 solar biblical days. Either way, water is the foundation for all life on the planet. Without which, we would not have this interaction between you and me at all. Our indigenous ancestors understood the mystical nature of this planet through time and experience with their environment, and created a way to maintain a continuity for their future generations. This helped preserve the ecosystems and maintain a spiritual and emotional relationship between the indigenous and mother earth, until emperors, conquerors and conquistadors

carved kingdoms and plundered the earth's resources. These kingdoms were expanded into the industrial revolution, evident today in the stock markets guarded by the industrial war complex. The collateral damage in wars were soldiers then, but the industrial revolution today with its extractive industry, has directly damaged and in many cases, caused irreversible destruction to Mother Nature and her sentient systems and sentient beings, all of whom were ordained by the Divine life source in them with a purpose for the collective whole.

3. We Are Trustees of the Planet, Not Owners

The colonialist mindset was evident in the 'Second Treatise of Government' written by 'philosopher' John Locke and published in 1689. Locke claimed that "you can acquire a right to own natural wealth by mixing your labour with it: the fruit you pick, the minerals you dig and the land you till become your exclusive property, because you put work in it." This justified all plunder by the colonialist who landed in ancient countries with ancient cultures. Based on this concept, the decimation of ancient communities who were protecting precious ecosystems were justified. Nations were conquered, ancient cultures and monuments were destroyed, millennia of wisdom lost for the sake of gold and slaves. A popular jurist and professor of law at Oxford University, William Blackstone's books were influential in England and America during his time in the mid 1700's and post that too. He contended that a man's right to 'sole and despotic dominion' over land was established by the person who first occupied it, to produce food. This right could then be exchanged for money.

Locke used America as an example of the blank slate on which people could establish their rights. But the land (as Blackstone admitted) became a blank slate only through the extermination of those who already lived there. Not only could colonialists erase all prior rights, he could also erase all future rights.

What prompted this thought process in Europe? Many point to the Catholic Church. But the Church was only looking after the concept of morality (albeit counterproductive in the processes back then) and not market or issues of land and ecology. Toward the peak of the industrial revolution, Pope Leo XIII addressed the effects of the industrial revolution in his Encyclical *Rerum novarum*,

which translates appropriately to, "of new things." In his Encyclical, Pope Leo XIII focused on the economic morality and never touched on ecology and trusteeship.

This lack of understanding of the ancient traditional and indigenous communities by the Europeans, and the disconnect from the ancient systems by the internal domineering tribes within the indigenous communities, is what paved the way for plunder and acquisition by colonists. Greed justified everything. The industrial revolution was the outcome of the prevalent thought processes some 400 odd years ago, and has created major problems for us and the future generations.

Citing ancient wisdom, many indigenous people from all over the world have expressed their intimate connection with Mother Earth, these indigenous people share their understanding with us: "We do not inherit the earth from our ancestors, but borrow it from our children." – Native american proverb. "A Man's heart away from nature grows hard." – Standing Bear, Ogala. "Our Spirits never leave the mountain." – Dongria Kond, India. "The Earth does not belong to man, man belongs to the earth. All things are connected, like the blood that unites us all. Man did not weave the web of life, he is merely a strand in it. Whatever he does to the web, he does to himself." – Chief Seattle. "Only when the last tree has died, and the last river poisoned and the last fish been caught, you will realise you cannot eat money." – Cree Indian proverb.

The indigenous on the 7 islands of Bombay – India, call their ancient lands as Mobaim, which translates to, 'Mob' – People and 'Aim' – Mother – People's Mother. Most of us indigenous people in India refer to Mother Earth as 'Mai Maati'.

The indigenous world over have been living in harmony with mother earth since millennia, and have protected her resources and wealth without hurting her and themselves. Hence, the industrial revolution had rich resources available to industrialists and were not depleted, only because the indigenous had maintained those ecosystems until then. There is much to learn from the ancient communities who were protectors of all natural systems. The indigenous maintained those systems because they had a deep connect and a sense of moral obligation for future generations. The indigenous around the world consider themselves as trustees of the planet and not owners.

4. Mis-Management of Water and Other Resources – Status Quo

Dr. Masaru Emoto, in his water experiment photographed water crystals, exposed to various intentionally written words that were stuck to the same sample of water. The results were astounding. He summarised, water reacts to the human intention and, claiming water is alive. Nobel Laureate scientist, Dr. Luc Montagnier took forward immunologists Jacques Benveniste's work, 'Water Memory'. Luc Montagnier proved water has memory in an experiment that was filmed live.

This should give us a glimpse, as to why the Bible placed so much emphasis on 'living water', and God and water are mentioned in parallel, in comparison. Water is mentioned 722 times in the Bible, more often than faith, hope, prayer, and worship.

Water is life, because water is alive and now we know that water has memory. Could you say water choses its own path? Could you say that the frequent drought and flood are the outcome of the will of water? Is water being gentle and not wiping us out totally, not destroying us from the face of this planet, yet?

The water cycle is, when water evaporates and form clouds, travels with the established winds, deflecting mountains and precipitates or fall as rain or ice in its predestined location – a process that took billions of years, and is a set pattern. This water cycle gives its lifeforce to all living creatures and systems it falls on. This water cycle is governed by seasons, which are again governed by the positions of the planets and the Sun in relation to the earth. This complex system that allows life to flourish on earth, is governed by the cosmos directly. Life on earth has an interaction with all the planetary and cosmic systems around us – we are interconnected. Whatever happens here is also impacting the cosmos, since whatever happens out there impacts us, there is so much to learn and we are yet to discover so much more.

This water cycle replenishes rivers, oceans, lakes and provides for all living systems on the planet. Nation states were carved out by humans and control systems put in place. The natural resources were divided among nations through war and cooperation and ecosystems were taken for granted, since humans were in a bubble of their own creation, 'the self'. These natural resources were not maintained as well as the indigenous people did for millennia. The indigenous were considered a rag-tag people (force) when they resisted the plunder by colonising states. The indigenous were summarily wiped out. Today, the indigenous all over the world are either arrested, displaced or

simply killed because their habitat is on top of fossil or mineral reserves, or their habitat is in the way of hydro dam project. New York once had many indigenous tribes and wild life, today it's just a concrete metropolis of migrant humans, busy in their big bubble. In India, South America, and Canada, the indigenous continue even today to fight for their access to water and compensation for displacement.

The world is divided into the 'haves' and the 'have-nots'. This is true in every sense. The poor and the meek are oppressed and marginalised, either because they belong to a 'lower' economic or social strata, or they are in the way of development projects that benefit a few powerful businesses, the latter is the most cause of oppression. These marginalised communities are denied their right to resources which nature gives so freely. Water is denied to these marginalised communities, many of whom exists in India and in developed countries. In India, the marginalised are denied water from the main water well of the village. The indigenous communities are displaced and denied access to those very rivers they once lived in harmony with for centuries, in the name of conservation of forests in India. Canada, USA, and Australia, with a majority of their Christian population, have denied rights to water to the indigenous of those lands.

5. Water Wars

Water, being a limited and irreplaceable life source and the demand for water by humans, leads to conflict. Water is the heart and soul of agriculture and food production. Good water gives great health too. Human settlements evolved from around water sources. Traditional communities have always respected and shared all natural resources as a community. The industrial revolution and the race for better GDP and perpetual growth, have nations and corporations scatter for the world's precious resource – water. "There are 261 international rivers, covering almost one half of the total land surface of the globe, and untold numbers of shared aquifers. Water has been a cause of political tensions between Arabs and Israelis, Indians and Bangladeshis, Americans and Mexicans, and all 10 riparian states of the Nile River." The current conflict around the Euphrates river dates back to thousands of years.

The outcome of war and conflict as we know, is suffering, injustices and death.

6. Droughts

Droughts have a varied set of definitions. Human activity indirectly and directly causes drought. Drought is when there is more evaporation of water from the ground than there is rainfall in that area. This definition is partially true because it does not attribute drought to only human activity. Drought occurs when humans misuse land and resources. Drought occurs over a single generation due to over exploitation of the land, or it occurs over several generations of exploitation.

As discussed earlier, water has a predestined path programmed over millennia of routine. Water is pulled down from clouds by the tree tops also called as catchment areas. This path of water gets disrupted when mountains are cleared of their trees by humans. The rain arrives, but there is no biomass to hold that rain. The area floods and over time, water stops coming there, or clouds do not come to those areas eventually. Another contributor to drought is when farmers keep goats for their milk and for their *high priced* meat in the market. Goats do not allow any new sapling to take root. Their hoofs crush any new hope of a sapling, also called as pugging, crushes any hope of seed germination too. They consume all grasses, shrubs and their leaves. With the loss of a ground cover, this exposes the soil to the heat of the sun. Evaporation takes place. Soon the wind arrives and lifts all light weight biotic material from that area that are healthy components of soil, leaving behind the heavy sediments composed of rock and sand. Since the soil nutrients have been blown off with the wind, the composition of the soil is not conducive for any grass or plant to establish themselves or grow there. Goats and spotted deer's eat leaves of plants. Leaves as we all know are the complex mouths of plants. Leaves use the radiant energy of the Sun through the complex process of photosynthesis, to create food for the plant or tree. If unchecked, the goats and spotted deer's will consume all the leaves of the plant. Without leaves the tree eventually dies. Goats can reach plants where other animals cannot. "About 20% of the world's pastures and rangeland, with 73% of rangelands in dry areas, have been degraded to some extent, mostly through overgrazing, compaction of soil and erosion". When farmers continue to deplete ground water and continue the use of chemical fertilisers for more yield and profit, the soil composition is unsuitable for any plant life to establish themselves there. There is no ability to hold moisture in the soil, we can then easily say that we are experiencing drought. This is the real drought, created by humans.

Drought can be reversed and needs human assistance and nurturing. Sustainable agriculture is the way forward.

The forests floor is a storehouse for water. The root systems of trees, trap and store water. A collective of trees are responsible for the flowing streams downhill. If there are no trees on mountain tops, the rivers below run dry. There is a co-relation between tree covered mountains and a flowing river stream below. The size of forest is co-related to the width and water level of rivers nearby. Forests are destroyed for agriculture, which is run by the affluent. Water is diverted to these agricultural projects, denying the rest majority of those dependent on that water source. Forests belonged to all, even the sentient beings living there. This forest is cut for humans and what was once belonging to the whole is now privatised. Water that belonged to all, humans and insects, animals and birds, is now diverted to benefit only the affluent human.

7. Water, a Right of All Sentient Beings and Sentient Systems

Water is what makes this planet alive. Humans have just barely arrived in the larger scheme of things. This water belonged to all sentient creatures before humans arrived. Water was not exploited and mismanaged before humans. Today all of the earth's resources are exploited and monopolised by humans. Among humans, the affluent get a larger share of water.

From all the water on this planet, only 1% of this water is drinkable. The rest of the water is ocean water: 97.2%. Icecaps and glaciers: 2%. Water in the atmosphere: 0.001%. Water in salt lakes & inland seas: 0.008%. Groundwater: 0.62%. Fresh water lakes: 0.09%. Rivers: 0.0001%.

Birds need to drink water twice a day. Animals and insects need water daily. Without water they cannot manage their functions in their established ecosystems. Ecosystems start weakening if the species of those ecosystem do not get their share of water.

Rivers are alive and need to flow as per their ancient natural paths. Mountains resonate a frequency and are alive too and must not be cut down. The forests need to be on top of mountains to attract the clouds for rain. Fish need clean water to live in and thrive, insects need water to thrive, animals need water and birds need water too. If water is proposed to only be a human right, then we have not placed ourselves as trustees of the planet. We have become unjust to the rest of creation. Altruism is a gesture meant for all on

this planet, only then we would call humans as a compassionate creature instead of a destructive self-centred species, looking for his good and for the good of his kind.

The Divine life force is what makes all living creatures alive. We can't be selective and play God on which creature must be cared for and which must be abandoned. Because the Divine takes care of all creatures, and we are to emulate the spirit of the Divine in us, we too must start caring with natural repellents. Cockroaches too have a function in the 'whole'. They are a part of the detritus ecosystem and consume all wasted food. They produce a waste that is rich in micro biota, essential for the soil and plant nutrients. All life above ground is governed by micro-organisms in the soil. Once we understand this, we will also understand why soil gets degraded when we use chemicals in fields and chemicals at home. Plant root systems have been working in a symbiotic relationship with micro-organisms for survival since millions of years. Without micro-organisms, there would be no terrestrial and aquatic life – basically micro-organisms are the foundations of all life on this planet, the universe, multiverse and omniverse and Water gives them life. Without water there is no life. Hence this right to water must extend to all sentient beings as it is Divinely ordained.

8. Conclusion

Can we decide how tall a tree should grow? Can we decide how much rain should fall? Can we decide which way a river should flow? Can we humans decide which way the wind should blow? All natural systems have taken their time to establish their Divinely ordained natural paths. With human interference, these natural paths have been disturbed, thus we are in this atmosphere of a climate catastrophe with natural resources becoming scarce for humans, as well as making other sentient creatures go extinct, thus disrupting the ecosystems of which they were an integral part. We were given dominion or sovereignty as trustees, we were not given the right to plunder over the earth and her resources. We were not to make creatures suffer in despair and go extinct. We are not supposed to cause direct or indirect harm to our fellow human beings. With the destructive human patterns of existence, unknowingly and knowingly we have caused so much death and destruction.

Water is the right of all human beings, because it is us humans who have made that law to benefit ourselves. How about as trustees or caretakes of the

planet, we give the planet an inalienable right to exist as it chose to be before we came along? How about we extend those inalienable rights to every insect, micro-organism, every weed and shrub, every fish and animal to co-exist, and we with them in harmony. How about we loosen our clutches from Mother Earth's throat.

Pope Francis' Encyclical *Laudato si'* says: "Laudato si', mi' Signore" – "Praise be to you, my Lord." In the words of this beautiful canticle, Saint Francis of Assisi reminds us that our common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us. "Praise be to you, my Lord, through our Sister, Mother Earth, who sustains and governs us, and who produces various fruit with coloured flowers and herbs."

This sister now cries out to us because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her. We have come to see ourselves as her lords and masters, entitled to plunder her at will. The violence present in our hearts, wounded by sin, is also reflected in the symptoms of sickness evident in the soil, in the water, in the air and in all forms of life. This is why the earth herself, burdened and laid waste, is among the most abandoned and maltreated of our poor; she "groans in travail." (*Rom* 8:22).

Let's make things right. Let's live frugal lives. Consume only what our body needs not fulfil our hearts' greed. Eat meat or vegetables and have a relationship with our food. Know where our food came from. Let's give thanks to Mother Nature for her gifts and sacrifices, which is again Divinely ordained. Let's be grateful for the warm Sun, the Ocean, Rain, Snow, Wind and the Moonlight, and know that we are a part of the larger cosmos and we are not meant to be in our bubble of our own making. Let's find purpose in functioning for the Greater Good. Let us include other sentient beings as family. Let us use 'We' (us and the collective whole) more often than 'us humans'. Let us meditate or contemplate that we share this planet with all, the collective whole. Then only we will find empathy in our hearts and that empathy can resonate with our environment. The Environment is a reflection of our hearts. To heal the environment we must first start with our hearts.

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VALUING WATER IN LIFE AND CULTURE IN ASIA

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1. How Asian Cultures Value Water

Religious and socio-cultural values of water are highly interlinked in Asia because 95% of our population identify with a faith, with Catholics representing 3%. Below are just a few examples of how Asians value water through socio-cultural and religious practices.

The Mekong River, shared by five Asian countries, starts from southwestern China where the river is called Lancang, then irrigates Laos, Cambodia, and Thailand, before flowing out to the Mekong Delta in Vietnam.

Songkran is a term derived from the Sanskrit word, saṅkrānti (or, more specifically, meṣa saṅkrānti, meaning 'passing' or 'approaching') and refers to the traditional New Year celebrated in Thailand, Laos (Pi Mai), Cambodia (Moha Sangkran during Bŏn Chol Chhnăm Khmê), Myanmar (Thingyan), Xishuangbanna in China (Dai people water-sprinkling festival) and parts of Vietnam. The celebration of Songkran itself originates from a Buddhist story of Kadilla Brahmā. Celebrated in April of each yaer[1], Songkran relates to the Hindu calendar-based New Year festivals in most parts of South Asia[2] which are collectively referred to as Mesha Sankranti.

In Thailand, the Songkran Festival is a period when people splash water on themselves, which they believe will cause plenty of rainfall in the coming year. Water is used to cleanse themselves of bad things. During a holy cleansing process, scented water is poured over the monks during prayers and bless-

[1] Songkran 2021 was held from 13-15 April.

[2] Including Sri Lanka, Nepal, Bangladesh, and parts of Northeast India (Rongali Bihu in Assam).

ings. In Myanmar, the Maha Tingyan Water Festival celebrates the descent of a celestial Buddhist figure to Earth. Ceremonies are held in nearly every village, city, and town. In Cambodia, the Bon Om Touk water festival draws a million people to the capital Phnom Penh where the Mekong River meets the Tonle Sap River before the COVID-19 pandemic. The festival is celebrated at the end of the harvesting season, when farmers enjoy the fruits of their labor before the rainy season begins.

In Indonesia, Balinese people consider the Springs of Tirta Empul at Tempak Siring Temple as sacred, and the place where they hold a Hindu cleansing and purification ceremony.

In the Philippines, many communities throughout the country hold water festivals to commemorate the feast of St. John the Baptist every 24 June. The most known among these festivals is the Wattah Wattah or Basaan Festival in the City of San Juan. Devotees and residents believe that getting wet during the *basaan* brings blessings, and it is antisocial to be irate when doused. For the revelers, water is life and a blessing, for cleansing and renewal.

The Bajau peoples consider the seas shared among four Southeast Asian countries as their ancestral domain. Across these seas, the Bajau move around on their boats and create villages on the water. Bajau children learn everything from their parents, practical things like swimming, fishing and diving. To them, the value of water is more than economic or aesthetic, these seas are an integral part of their culture. Scientists call their ancestral domain as the Coral Triangle, because of the great biodiversity found underneath these seas. Some say there are around 100,000 Bajau people, but this is very difficult to ascertain because most of them do not have identification papers with either Philippines, Malaysia, Indonesia, or Brunei.

2. The Disconnect

Many Asian cultures celebrate these water festivals with a huge focus on the festivities, but often forget the reason for celebrating – to thank God for the water that allows us to live, and to care for what we have been blessed with. Moreover, after festivities venerating rivers, we go on to pollute them, block their flow, and desecrate them. There is a huge disconnect. Because of this, we are breaching 'boundaries on the landscape'. Scientists identified nine of these interlinked boundaries:

1. Climate Change.
2. Land System Change.

3. Biogeochemical Flows.
4. Novel Entities.
5. Atmospheric Aerosol Loading.
6. Stratospheric Aerosol Depletion.
7. Freshwater Use.
8. Biosphere Integrity.
9. Ocean Acidification.

We are reaching the tipping points for several of these boundaries, for which there is no turning back – including climate, biodiversity, zoonotic diseases and food availability.

2.1 *Demand Change Drives Water Scarcity in Asia*

Asia is currently home to 4.5 billion people, who use around 65% of the world's water supply. On average, 70% of water resources in the region are used for growing food. Around 30% of the Asian population is already facing water scarcity. Given this context, in 2017 the International Institute for Applied Systems Analysis (IIASA) modeled three water use scenarios for Asia by 2050. The worst-case scenario is described as 'Regional Rivalry scenario' while the best-case scenario is that of sustainability, which can only happen if there is collective will.

The red color on these maps (which are easily retrievable online) indicate which factor drives water scarcity in a certain region – supply or demand. Philippines and Borneo are light-colored in the top maps and red in the bottom maps, indicating that they generally do not have much problem with water supply because rains (and typhoons) recharge their rivers. However, there is a lot of demand, thus still resulting in water scarcity.

In contrast, Australia that experiences extended droughts and severe wildfires, is red in the top maps and blue in the bottom maps. This indicates that lack of water supply is the main factor driving water scarcity.

The forecast is that around 1/3 to 2/3 of Asia's population will experience water scarcity by 2050, depending on the scenario. The study also projects water demand in Asia to be larger than all the other continents of the world put together. Under the middle of the road scenario, by 2050, 20% of the land area of Asia, with a population of 1.6-2 billion people, is expected to be facing severe water scarcity.

The IIASA's most surprising finding is that demand change can be more significant than climate change over many parts of Asia. This is the first time that socioeconomic changes have been identified as the main driver of water scarcity.

Many river basins already cannot cope with the demands placed upon them. The typical strategy of governments to address increasing water demand is to build dams, such as the controversial Kaliwa Dam in the Philippines that aims to supply growing demand in the country's National Capital Region. The fragmented and siloed approach to water management, combined with overlaps in regulatory structure and lack of coordination, often result in confusion and finger-pointing when crises emerge.

2.2 *Water Inequity in Southeast Asia*

In countries that are part of the Association of Southeast Asian Nations (ASEAN), water is secure and available but not equitable and efficient. This finding is based on the 2019 Environmental Sustainability Index Report of Euromonitor, that used water as one the pillars for the index. The water pillar index ranked the performance of six Southeast Asian countries compared to 97 other countries outside of the region in terms of equity, security, availability and efficiency. Equity assessed access to improved drinking water and improved sanitary facilities. Security looked at water stress and total precipitation. Availability represented water withdrawal and renewable water resources per person. Efficiency reviewed water productivity. The higher the rank, the less sustainable.

Singapore has the best rank among these ASEAN countries even though it lacks freshwater source and imports water from Malaysia and thus ranks poorly in terms of water stress and availability. As water management is a national priority for Singapore, its citizens have good access to drinking water and sanitation, and mechanisms are in place to ensure efficient water use. Indonesia, on the other hand, ranks last because it fared poorly in terms of efficiency (water productivity) and equity (access to drinking water and sanitation).

Displacement of rural villagers, including indigenous communities, is a common consequence of dam construction in Southeast Asia. Resettlement areas are often in places that are vulnerable to disaster risks and far from sources of livelihood. A recent case is the relocation in 2019 of over 12,000 people to allow for the construction of seven dams on the Nam Ou river,

a key tributary of the Mekong in Luang Prabang province of Laos. The resettlement village was built on the edge of a steep hillside that is prone to landslides. Eleven hydropower dams are in various stages of planning and construction in Laos and Cambodia on the mainstream of the Mekong river, along with hundreds of dams on its tributaries.

2.3 *Water as a Symbol of the Cry of the Poor in Asia*

Five Asian countries are among the top 10 countries with the greatest numbers of people living without access to safe water – India, China, Indonesia, Bangladesh and Pakistan. Additionally, Papua New Guinea ranks first among the top 10 countries with the greatest percentage of people living without access to safe water.

In the rural villages of Cambodia, the cost of buying 50 liters of water (€ 2.05) represent up to 108% of the typical income of a poor person's salary. In Papua New Guinea, 50 liters of water from a delivery service cost as much as € 2.16, representing 54% of daily earnings of the poorest of the poor. Over half of the country's 7.3 million population (60%) lives without safe water. India has the most number of people without access to safe water (75.8 million) and over 140,000 Indian children die from diarrhea because they lack access to clean water.

The Bajau community living in the Coral Triangle may be surrounded by water, but they have very little access to freshwater. Because they are often not registered in any of the countries that claim ownership of their ancestral waters, no one bothers to think about how they can get basic services like water and sanitation without compromising their way of life with the seas.

Fifteen million people across seven Asian cities will live in areas at risk of inundation by 2030 as sea level continues to rise and floods and storm surges become more frequent and intense due to climate change. When these disasters strike, it is usually the urban poor who are the worst hit. Pushed on the edge of livable lands in the cities, their informal settlements cling to riverbanks and cluster in low-lying areas with poor drainage, few public services, and no protection from storm surges, sea-level rise, and flooding.

2.4 *Water as a Symbol of the Cry of the Earth in Asia*

The Pacific Ocean, one third of the planet's surface, is the largest climate determinant of the earth. Asia and Oceania share a common image in the

'River Above' – the Pacific Ocean is the life, the river of Asia feeding all rivers. The winds and the water of the Pacific moves always west to Asia, affecting all seasons and all lives. This flow is life-giving and life-taking, especially as the climate is changing and resources are being exhausted. The welfare of the lands and peoples is bound to the welfare of the seas.

The loss of marine biodiversity is weakening the ocean ecosystem and its ability to withstand disturbances, to adapt to climate change and to play its role as a global ecological and climate regulator. Historical ocean records indicate that overfishing, along with chemical pollution, microplastics and other human activities, catalyzed the decline in marine biodiversity in a variety of habitats, including in seagrass beds, estuaries, mangroves, and coral reefs.

In the Coral Triangle that has over 2000 reef fish species, 79% of reef fish reproductive gatherings have stopped forming or are declining. The trigger for filing an arbitration on the West Philippine Sea before an international tribunal was when the Philippine Coast Guard discovered the destruction of 300 acres of coral reef systems due to China's reclamation activities, and conduct of fishing practices harming endangered species. The Philippines claimed that China breached its obligations under several international agreements, including the United Nations Convention on the Law of the Sea (UNCLOS), the Convention on Biological Diversity (CBD, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Tonle Sap Great Lake in Cambodia, the world's largest flood-pulse ecosystem, has lost nearly one-third of natural habitats within its UNESCO Biosphere Reserve over the past two decades. Each year in the wet season, water flowing back up the Tonle Sap River from the Mekong River, and inflow from the catchment of the lake, causes it to expand up to five times its dry season area and volume. However, lower-than-average rainfall, construction of hydropower dams on the Mekong River and its tributaries, and water diversion for agriculture have led to lower water levels in the lake. Habitat loss in the seasonally flooded forest, scrubland and grassland of its floodplain is detrimental to 149 fish species including the critically endangered Mekong Giant Catfish, as well as 11 globally threatened and 6 near-threatened species including the Spot-billed Pelican.

3. Valuing Water Through Connecting People and Nature

To address the disconnect, we need to reconnect. Following are examples of how connecting to act with others can make a difference.

"Those who enjoy a surplus of water yet choose to conserve it for the sake of the greater human family have attained a moral stature that allows them to look beyond themselves and the group to which they belong. How marvelously human!" (*Fratelli tutti*, 117).

3.1 *Personal Conversion*

Since the disconnect first happens at the personal level, transformation needs to start from within. Faith-based organizations have a huge role to play in promoting water justice because of their ability to touch people's hearts. Their presence in local communities and networks around the world place them in a good position to amplify voices of conscience.

For example, Santiwana, near Bangkok, Thailand, is located on land lower than the surrounding area and floods at least two months every year in the rainy season. Initially set up by the Ursulines and Jesuits as a retreat center for youth and city people who seek a place for quiet and solitude, it is now a vibrant Eco-Community with a shared vision of "living in harmony with nature in sustainable community with a spirit of love, sharing and sacrifice for our common home."

During *Laudato si'* Week 2020, the Australian Jesuit Province put out a challenge for all to learn, pray and take action for the sake of all of God's creation. Sue Martin took that challenge and reflected each day on one chapter of *Aqua fons vitae*. Her reflections led to her commitment to animate care and connection for the Murray-Darling basin. With Jesuit communities, she undertook Living *Laudato si'* workshops within the Murray-Darling basin system and linked tree planting initiatives to the Flights for Forests program that supports communities protecting and regenerating forests in Asia-Pacific.

3.2 *Community Collectives*

Local communities tend to better protect local water resources, because of their long-term interest in the ecosystem, given the right knowledge, skills and capacities.

In Kompong Phluk, a community in Cambodia's Tonle Sap Lake, elders shared the story of how they worked together to find a common strategy for resource management. Motivated to protect their homes from storms and winds, they agreed to stop farming watermelons near their villages in the late 1940s and to let the forest naturally regenerate until the former watermelon patch became a high-density forest surrounding the commune. This regenerated forest helped to protect their homes from storms and winds, in addition to providing a home for fish. However, after this effort, they faced many challenges, including forced relocations during the Khmer Rouge regime that expanded agriculture production. After the regime ended in the late 1970s, immigrants came and started shifting cultivation. Throughout the 1980s and 1990s, flood forests were cut to make way for mung bean farming. In 1995, more than 100 fishing villagers demonstrated against mung bean farmers who cut and burned flood forests to expand their mung bean cultivation. In 1997, the community was confronted with the expansion of commercial fishing lots, further reducing communal fishing grounds. Such developments motivated Kompong Phluk village leaders and members to plan for ways to protect their flood forests. The many efforts of Kompong Phluk served as an example that prompted Cambodian government to pass a Community Fisheries Sub-Decree, giving local communities the right to organize around their resources.

In Sabah, Malaysia, the Kadazandusun indigenous peoples have a traditional practice called *tagal* for managing their inland fish and rivers. The tagal system involves an agreement among riverine villages to stop fishing during certain seasons or to close certain portions of the river to allow the fish to spawn. Studies about the impacts of this traditional practice on improving fish catch convinced the State Fisheries Departments of Sabah and Sarawak to issue a policy promoting the spread of the tagal system. Recently, the tagal system is being promoted as a basis for developing a legal framework to recognize Indigenous Community Conserved Areas (ICCA) in Malaysia.

3.3 *Local Interconnections*

Sub-national governments are in a good position to upscale the value of water through seeking collaboration at the watershed level.

In Bohol, Philippines, a lady mayor of Candijay Municipality approached ESSC because she wants to find a way to address the recurring problem of flooding in her jurisdiction. ESSC conducted research about the watershed

where her municipality belongs. Her desire led to dialogues with 5 other municipalities in the watershed of the Carood River, and the formation of a watershed management council to discern about jointly-identified resource management concerns. The Philippine Watershed Management Coalition tracks over 60 of these local watershed movements around the country and brings them together to exchange experiences and good practices.

The trend of granting rights to nature, taking place around the world, is also catching on in Asia. In 2017, the Uttarakhand High Court in India granted legal personhood to the Ganga and Yamuna Rivers, and New Zealand passed a similar law for the Whanganui River.

3.4 *Transboundary Initiatives*

Transboundary initiatives are important mechanisms for action to respect planetary boundaries, especially since administrative and political boundaries often do not follow natural boundaries in the landscape.

The orientations given by the Encyclical Letter *Laudato si'* and the Apostolic Exhortation on *Querida Amazonia* gave inspiration for ecclesial networks to be constituted in different parts of the world. REPAM, the first network to be formed, gathered Church leaders from all parts of the world in March 2019 to prepare the path to the Amazon Synod and what could be the outcomes for other regions. At the Asia-Pacific working group meeting, Pedro Walpole SJ introduced the concept of the 'river above'. In November 2020, FABC and FCBCO came together for an online launch of RAOEN – River Above Asia and Oceania Ecclesial Network. The mission of RAOEN is to dialogue, to discern, to do things together with a common desire to live out *Laudato si'*, guided by *Fratelli tutti*, and raise the voices of indigenous and local communities whose lives and livelihoods are closely tied to the fate of our landscapes and seascapes. RAOEN is animated by a Steering Committee that meets monthly and an Extended Consultative Group that meets bi-monthly. On 29 September 2021, they organized an online event on *Ecclesial Synodality in the Shared Mission of Oceania and Asia* in collaboration with the Dicastery for Promoting Integral Human Development, Ecclesial Networks Alliance (ENA) and Caritas. Inspired by the keynote presentation of Cardinal Mario Grech on *Synodality – New Ways of Being Church*, the event created space for dialogue between local voices and Church and ecumenical leaders on how

collaborations and commitments can be strengthened amongst groups with a common desire to care for the oceans and forests.

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RIVER AND WATER EDUCATION AS A REQUIREMENT IN DEVELOPING COUNTRIES RURAL AREAS

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1. Introduction

Water is probably the strongest link between human life and nature conservation. We dare to say that in a mountainous water basin, if all is well with the water, all the rest of the ecosystem will go well. Water is the greatest connection and one of the greatest indicators of our relationship with nature. At the same time water basin pollution management is closely related to human health. Waterborne diarrhea is the second leading cause of death among children aged under 5 years in low-income countries (828,651 per year) causing nearly 50,000 daily diseases (WHO 2019). Also, WHO considers malaria and dengue that causes 354,239 deaths per year as diseases coming from inadequate water resource management.

In developing countries water originates in mountain basins where, in general, poor peasants live. Their biggest concern is to survive, growing beans and corn, for example. Rivers are a source of drinking and irrigation but, at the same time, a way to get rid of garbage easily. Rural inhabitants, as well as city dwellers, do not understand the properties of water and the consequences of dumping their waste into the rivers. There is a total lack of "water and river education" in every country where we have conducted water research. Part of the problem is that, traditionally it has been very difficult to easily measure water properties and to establish links between these properties and consumption as well as with the environmental impact of poor management.

Let us offer an example of this inability to understand the nature of water. Poor peasants know that when a grain of coffee becomes red it is time to

harvest it. Agriculture, at its basic form, in this sense is an easy to learn and transmit technique. Silviculture is a little more difficult, but some experienced peasants are able to distinguish when a tree can be harvested without having a negative effect on the forest. But unfortunately, water management is a blind spot for most people. Rural people cannot tell whether water it is drinkable or not. It cannot be seen with the eyes directly. Water must be taken to an expensive laboratory far away, and the results come back much later. This leads to the local conclusion that water cannot be managed other than to chlorinate it "just in case", and this does not always happen.

In the other hand, public policies in safe water, sanitation and hygiene (collectively known as WASH) in developing countries are crucial for human health and well-being. Still millions of people globally lack adequate WASH services and consequently suffer from or are exposed to a multitude of preventable illnesses (WHO 2019). But again, as most of public policies in developing countries, and even on developed ones, assume that water is always going to be dirty, instead of trying to educate the rural population on protecting their clean water, the only thing they can do related to WASH policies is helping communities on chlorinating water.

Rural water education has been considered too complicated and expensive, and the local need for clean water too relevant to focus policies in local education. Action – which means infrastructure – is required instead.

We can understand the severity of the problem with the current example of COVID-19. Let's imagine a country where to know if you have COVID-19 or not, you need to take an expensive test far away from home whose results will be known in five days. Can we establish an effective preventive policy? Now imagine a place where everybody can know, in real time, the state in his health. If we extend the immediate knowledge of our own health, or the ecosystem health (whose best indicators in a mountainous water basin can be found in the quality of the water of the creeks), we will be empowering local rural poor communities regarding their health instead of waiting for the government to solve the problem, which is normally very weak regarding the environment and do not have the capacity to enhance rural environmental policies. This does not mean that we do not need public infrastructure (we need hospitals for COVID-19, for example), but an approach based in subsidiarity can give a more efficient understand, especially when current telecommunication (phones and apps) allow the communication of the information

of the problem to create efficient and quick solutions (Martínez de Anguita and Carrero, 2020).

This is what it is so important to empower local poor communities to know about the state of their waters according to two basic principles: subsidiarity and education. Environmental subsidiarity is the key (Martínez de Anguita *et al*., 2014). Water care must start at the local level, at the level of the community. Local peasants have the right but also the duty to care for their water. But in order to fulfill their task they need adequate tools and technical preparation.

2. Environmental Subsidiarity for Water Management

Subsidiarity can be defined as the political and moral principle that envisions that "everyone must be given maximum scope to exercise their own free will, and so achieve his or her own fulfillment by exercising all power in a society at the lowest and most local level compatible with the common good." (Caldecott, 2003). Subsidiarity implies that matters ought to be handled by the smallest, lowest or least centralized competent authority, while a central authority performs only those tasks that cannot be performed effectively, efficiently and equitably at a more immediate or local level (Carozza, 2003). The principle of "environmental subsidiarity" implies promoting systems that, where possible, enable people to enact their own forms of pro-social and proenvironmental behavior through voluntary, not coerced, cooperation (Martínez de Anguita *et al*., 2014). Subsidiarity as a right and a duty requires therefore higher political and community institutions that should not alienate the local individual but to support him.

This principle, applied to communities and their environment, has many implications. We will underline two: co-decision and education. Applied to environmental management, subsidiarity implies that the State should in one hand encourage society, and specially communities, to become responsible for the conservation of their ecosystems – water included –, and thus for its sustainable management at the same time it should provide the support and tools for doing it when required. And the main tool is education.

3. River and Water Education

This education must be based "from the assumption that, as long as something is not measured and quantified, nobody cares about it." (DPHID

2020). Without measuring water properties, no real knowledge on water can be transmitted, and therefore rivers cannot have clear qualitative and quantitative indicators not just of the drinkability, but also of nature and biodiversity state of its surrounding basin. Therefore, one thing is necessary, to spread water education, especially river education among poor rural communities, focusing in two groups: children, through formal primary and secondary educational curricula; and informal, throughout the work with communities, especially with the "boards of water" when they already exist in the communities. These boards of water ought not be, as is mainly the case nowadays, just a delegation of the community that simply chlorinate the sources of drinkable water, and look out for man-made infrastructure. They must become "water custodians" in all of their aspects, not just in the reception of treated water when this is the case for the community. They must understand the water basin as a whole. Obviously when these water boards do not even exist, it is a primary priority to help communities to develop one.

Coming back to the first area, "formal water and river education at school", it is essential to introduce this subject in the curricula of students – specially the rural children – with a practical approach. From age five, children could learn how to measure the quantity of water that rains at their local schoolyard with a plastic bottle by cutting the upper cone of the bottle and inverting it to make a pluviometer. At eight years old, they could understand what a water basin is, and probably multiply the estimated rainfall by the estimated water basin surface, and at ten years old, they could measure the flow in the river and compare these basic estimations. But hydrological education must not only be a question of quantitative flow, but of measuring with simple estimators the water quality in the rivers of the community at different moments of the year. Dragged solids in the river, amounts of different types of insects on the surface of the water or under the river stones, are primary indicators that even if they are not exact, will leave a mark in young children of what a river's life is about. Obviously, beyond this aspect of hydrological education, we are conscious of the need for more adequate and accurate tools to improve river water management. What we have mentioned are simple examples.

While working with rural communities we have realized that the main problem that is holding back their empowerment is the lack of cheap instruments to measure water quality. We consider the case of Dominican Republic and the management of water under the principle of subsidiarity as the most advanced experience in the developing world: Rural Communities (through

their Boards of Water) are empowered by the Instituto Dominicano de Recursos Hídricos (INDRHI) to measure regularly the water quality of their river and sources with the help of a water measuring kits that are given to the communities along with specific training for handling it, and sending the results via phone app to the INDRHI.

This "Vigilantes del agua" (water custodians) program is a perfect example of how to empower local communities through the principles of subsidiarity and education. The State supports the local responsibility of the communities, who are the group with the main interest in having clean water. They are encouraged to act, and if the problem is beyond them, then, the State is invited to act (when local communities denounce illegal dumping to the rivers they monitor, INDRHI can sends police to places where water does not follow the right standards). This case shows how innovation is not just about purifying the water but keeping it clean through the work of the main actors, the local communities.

4. Tools for Water and River Education

This is the direction in which we should expand water education rural policies, to provide local communities with adequate tools to become protagonists of the conservation of their water basins. And this requires cheap and easy to use tools. Unfortunately, the Dominican Republic kit cost around $1500/unit per year. A basic objective should be to decrease this price to $50/unit. One of the most expensive tools used is the *Escherichia coli* detector kit. In order to solve this problem, we are trying to find a simple and economical methodology to facilitate the detection of microorganisms present in water for human consumption due to fecal contamination, mainly coliform bacteria, including *E. coli*. The presence of fecal contamination in drinking water leads to the appearance of diseases in humans that can be serious. The aim is to find a culture medium in which the bacterium develops, and their presence or absence is detected in that medium. The proposal aims to carry out various tests of bacterial growth in culture media which are easily accessible and available to the inhabitants of rural areas. The characteristics of coliform bacteria have been considered in the selection of these media. In the laboratory, we have developed a simple and economical methodology for detecting coliform bacteria and *E. coli* based on milk. The method is based on total coliform bacteria ferment lactose incubated at 35 °C – nearly human body temperature –,

and fecal coliform bacteria (including *E. coli*) also at 44 °C, for 24 to 48 hours, resulting in the production of acids and gas. We have tested this methodology in rural communities in the Dominican Republic and Honduras (using a home-made incubator made with a portable refrigerator and a light bulb, that could be in the future substituted by human heat) with promising results, so we are on the right track to replace expensive kits with cheap and commonly used mediums.

There are many other indicators of water quality that require research to become accessible to provide rural communities adequate knowledge about their water but we are convinced that we are on the right track. Simplified science, at the service of the poor, to empower them with the knowledge they need to handle their water, not only by purifying it but in order to understand the wider bond with the water basin, a basin that is normally the natural conservation and sustainable resources management unit in rural areas (especially in mountainous ones).

By working on school curricula for hydrological and river sciences and introducing advances in the creation of water management kits for communities, we believe we can empower communities to exercise their right and responsibility to care for their local water, and even in the future to ask local and national governments, not only a fair help to fulfill their duty, but even for compensation and recognition as their work helps other water beneficiaries downstream enjoy a cleaner and safer water. These types of recognitions and compensations, including payments for ecosystem services, create a virtuous circle where it is not just technically feasible but economically efficient to care for water, expanding the care upstream to the whole water basin where a community lives and downstream for other neighbors and cities.

5. Conclusions

We strongly believe that both the methodological approach based on subsidiarity and education, as well as the technological one that we have developed can be valid methods to support community empowerment through easy to use tools applied to water measurements and therefore to river protection education. The challenge is huge, but we are convinced that we have a path to spread water and nature conservation in a very natural way, through their principal protagonists, local communities that need their water more than any other but lack the knowledge to care for it correctly. Their empow-

erment through adequate educative and technical tools is a new challenge. More research is required to ease measurements techniques available to poor populations as well as to create cheap and numerous kits and spread valid methodologies to help local communities to recover the control the once had over their water resources before the industrial revolution changed many water management patterns.

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EL DERECHO AL AGUA: CONSTRUIR SOLUCIONES A TRAVÉS DEL DIÁLOGO. LA EXPERIENCIA DEL INSTITUTO PARA EL DIÁLOGO GLOBAL Y LA CULTURA DEL ENCUENTRO

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Palabras clave: derecho al agua, justicia, inclusión, Amazonía, diálogo, agua, saneamiento, salud y gobernanza.

Francisco nos recordó en el Ángelus del 21 de marzo 2021, que la hermana agua no es una mercancía, es un símbolo universal y una fuente de vida y salud. Recordemos las cifras que aún tenemos en América Latina y que corresponden a datos recabados por Naciones Unidas, UNICEF, Banco Mundial: 28 millones de personas carecen de acceso a recursos hídricos mejorados y 166 millones carecen de acceso a agua potable; 15.6 millones defecan al aire libre y 83 millones de habitantes carecen de acceso a servicios mejorados de saneamiento. Esta última cifra aumenta a 490 millones si incluimos a quienes aún no tienen acceso a un saneamiento seguro. Las disparidades están presentes entre países como Haití, Dominicana, Nicaragua, Ecuador, Brasil y Bolivia en el extremo inferior del acceso, pero también son enormes entre las áreas rurales y urbanas y dentro de las mismas ciudades.

En las ciudades, la cobertura de agua potable es un 13% mayor en los hogares del quintil de ingresos más alto. Por tanto, paradójicamente, en un continente que alberga alrededor de un tercio de los recursos de agua dulce del mundo y donde la disponibilidad media de agua por persona es de más de 23 mil metros cúbicos al año – una de las más altas del mundo – el acceso sigue siendo para unos pocos.

En términos de salud, el consumo de agua contaminada y la falta de acceso a servicios mejorados de saneamiento provocan más de 4.000 muertes prematuras al año y las enfermedades diarreicas matan aproximadamente a 7.600 niños menores de 5 años al año. La pandemia de COVID-19 exacerbó y resaltó el efecto desastroso de estas condiciones ante situaciones extremas como una pandemia.

Pareciera innecesario repetir estas cifras en un artículo o en las presentaciones sobre el derecho al agua. Los datos siempre nos estremecen así como las desigualdades y sobre la información que ya es de público conocimiento se debe pasar a la acción. Debemos continuar destacando y poniendo de manifiesto estas cifras hasta lograr eliminar la muerte de personas por falta de un elemento tan fundamental para la vida como el agua y que todas las personas puedan vivir en condiciones dignas. No debemos olvidar que detrás de los números, hay personas con nombres, rostros, esperanzas que requieren soluciones concretas ahora independientemente de la conveniencia política, financiera o empresarial de abordar la extensión de una red de agua o cloacas, la instalación de una planta depuradora o la implementación de una solución no convencional. Así como ocurre con las decisiones que debemos implementar para solucionar las consecuencias dramáticas del cambio climático, los debates financieros, de poder político o de afectación de las ganancias de las empresas deben ir detrás del bienestar de las personas.

Desde el Instituto para el Diálogo Global y la Cultura del Encuentro, nuestro enfoque siempre ha sido el de promover diálogos hacia la acción convocando a quienes a quienes deben estar involucrados en la toma de decisiones y tener voz en los procesos que afectan sus vidas de manera directa.

Haciendo un recorrido sintético de algunos hitos de nuestro trabajo, en el 2017, organizamos el seminario internacional El Derecho Humano al Agua: un enfoque interdisciplinario y aportes sobre el rol central de las políticas públicas en la gestión del agua y saneamiento en la Pontificia Academia de Ciencias en el Vaticano. Participaron más de 100 referentes de todo el mundo de distintos sectores: academia, empresas, gobierno, sindicatos, religiones, comunidades. La Presidencia del seminario estuvo a cargo del cardenal Claudio Hummes, quien en ese momento era Presidente de la Red Eclesial Amazónica y es ahora Presidente de la Conferencia Eclesial de la Amazonía creada luego del Sínodo de la Amazonía. El cardenal Hummes ha sido una referencia fundamental en todo nuestro trabajo desde el Instituto del Diálogo especialmente en la región amazónica. En ese mismo seminario, presentamos el proyecto de

Universidad del Agua en Argentina al que también se refirió el papa Francisco el domingo 21 de marzo del 2021 en el ángelus. Una Universidad que hemos impulsado desde nuestro Instituto para el Diálogo Global y que está gestionada por trabajadores; por el sindicato Gran Buenos Aires de Trabajadores de Obras Sanitarias. El Sindicato propone una visión de sindicalismo del Siglo XXI y agrupa a los cerca de 8.000 trabajadores de la empresa de agua AySA que brinda servicios a más de 14.000.000 de personas en la Ciudad Autónoma de Buenos Aires y parte de lo que se conoce en Argentina como Gran Buenos Aires. La Universidad está fundada en el reconocimiento del saber trabajador con una propuesta de construcción colectiva de conocimiento dialogal entre empresas, sindicatos, gobierno y con acuerdos e interacción con empresas, instituciones académicas y de investigación tanto de Argentina como del mundo.

En el Instituto solemos decir que "somos ese engranaje pequeño que debe ayudar a que los cambios ocurran". Ese ha sido siempre uno de nuestros objetivos. Quizá porque tenemos muy internalizado ese concepto de Francisco de que «con nuestro poco podemos hacer mucho».

Justamente el papa Francisco que generosamente honró en el 2017 el seminario sobre el Derecho Humano al Agua con su participación, dijo claramente allí: «Nuestro derecho al agua también es un deber con respecto al agua. Nuestro derecho al agua genera un deber inseparable. Estamos obligados a proclamar este derecho humano esencial y defenderlo, como lo hemos hecho, pero también debemos trabajar de manera concreta para lograr compromisos políticos y jurídicos en este sentido». Como siempre, Francisco es claro. El derecho al agua fue uno de los temas centrales en el Sínodo de la Amazonía del 2019 en el que estuvimos presentes y así hemos continuado con seminarios, acciones, programas que convocan a actores sociales diversos a construir soluciones de manera conjunta y a iniciar procesos transformadores hacia soluciones justas e inclusivas. Es pertinente recordar que los derechos y obligaciones describen las demandas de la justicia y el concepto de justicia del agua trasciende ampliamente la distribución, incluye el reconocimiento cultural y está estrechamente ligado a la integridad de los ecosistemas. La justicia del agua requiere un compromiso político urgente e integral, una acción consciente y justa ante un potencial genocidio, particularmente en regiones como la Amazonía, con el que gobiernos y corporaciones amenazan a regiones en distintos continentes, anteponiendo intereses económicos, políticos e ideológicos a sus deberes. Una distribución justa del agua que asegure un acceso universal al agua y al saneamiento podría ser una señal impactante de

un camino hacia una condición democrática mucho mejor en nuestras sociedades. Para nosotros, el diálogo es una metodología y una epistemología en la construcción de un camino hacia el logro de objetivos.

El problema del acceso al agua es un problema multidimensional que cruza lo ambiental, lo social, lo político, lo económico, lo financiero, lo religioso, lo cultural; requiere la voz de las comunidades, de las empresas, del estado, de la academia, de las religiones.

Encontramos usualmente que las soluciones no se implementan debido a la fragmentación del estado, a intereses financieros, políticos y en esas pujas, muchas veces propias de un sistema de compartimentos estancos, las personas pierden su vida.

En *Fratelli tutti*, Francisco nos dice que «el diálogo social auténtico implica la capacidad de respetar el punto de vista del otro y admitir que puede incluir convicciones e inquietudes legítimas»[1].

En nuestro enfoque, los diálogos que promovemos buscan ampliar perspectivas, la construcción de significados compartidos, tratando de encontrar espacios de acuerdo. El diálogo genera ambigüedades, ayuda a descubrir significados colectivos como anclas para comprensiones más profundas; implica escuchar sin juzgar y con miras a comprender; construir relaciones y permitir e invitar diferencias de opiniones y experiencias. Pero los diálogos hacia las soluciones también deben considerar a las diferentes partes interesadas como la academia, el sector privado, el sector público, representantes de diferentes religiones, pueblos originarios, ONGs y comunidades para lograr resultados significativos.

No podemos dejar a nadie fuera de los diálogos sobre los temas que afectan a todos y esta es una constante en todos nuestros proyectos.

En este recorrido que hemos tenido, si algo ha quedado claro es que el Derecho Humano al Agua es en sí mismo un derecho que se entiende ambiguamente en su definición, alcance, implementación y seguimiento; en los plazos para alcanzar soluciones; en cómo se reconoce en términos de política y práctica, así como en sus aspectos éticos.

Asimismo, los diálogos que hemos mantenido han puesto en consideración que una perspectiva exclusivamente utilitaria del derecho al agua pensando en las personas principalmente como 'clientes' podría llevar a un mayor

[1] Francisco, Encíclica *Fratelli tutti*, 203.

nivel de mercantilización y sobreexplotación del agua poniendo en peligro el propio ecosistema que debe sustentar el derecho al agua.

Justamente como parte de nuestras actividades, acabamos de lanzar un nuevo Diploma Internacional en Gobernanza, Regulación y Gestión Integrada del Agua. Cabe mencionar que el programa en sí mismo representa un coro de voces y diferentes perspectivas sobre los temas y es impartido por expertos de universidades argentinas, latinoamericanas y españolas, de Israel, del Reino de los Países Bajos y de Estados Unidos.

Debemos instalar y pensar cuidadosamente en las decisiones que tomamos hoy reconociendo que la decisión de actuar hoy definirá el tipo de futuro que tendremos. Las decisiones del gobierno y del sector privado definirán el futuro que tendremos.

Como dice el papa Francisco en *Fratelli tutti*: «Necesitamos desarrollar esta conciencia de que hoy o nos salvamos todos o no se salva nadie. La pobreza, la decadencia, los sufrimientos de un lugar de la tierra son un silencioso caldo de cultivo de problemas que finalmente afectarán a todo el planeta»[2].

[2] Francisco, *op. cit.*, 137.

EL VALOR DEL AGUA, SANEAMIENTO E HIGIENE EN TIEMPOS DE PANDEMIA Y LA IMPORTANCIA DE LA PARTICIPACIÓN DEL SECTOR PRIVADO EN SU ACCESO UNIVERSAL

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Palabras clave: agua, saneamiento, higiene, cooperación, salud, ODS3, ODS6 y WASH.

1. Introducción

Tras la iniciativa lanzada por el cardenal Turkson y su plasmación en el *Aqua fons vitae*[1], documento dedicado al agua publicado en 2020 por el Dicasterio para el Desarrollo Humano Integral, la Orden Hospitalaria de San Juan de Dios (OHSJD) decidió asumir el reto lanzado y sumarse a esta interesante iniciativa, en concreto en lo relacionado al uso del agua para el uso humano, un derecho que también abarca el saneamiento y las prácticas higiénicas. La iniciativa del cardenal Turkson acontece en un momento clave para la humanidad: la lucha contra la pandemia del COVID-19 y otras enfermedades infecciosas. Todo ello, es algo muy relacionado con la Misión de la OHSJD: salvaguardar la salud y la calidad de vida de las personas.

La Orden Hospitalaria (OH) de San Juan de Dios es una orden católica dedicada a actividades sin ánimo de lucro dentro del ámbito socio sanitario. Fundada en 1562 por los hermanos de San Juan de Dios, la Orden tiene el objetivo principal de promocionar y mejorar la salud de las personas y su calidad de vida sin distinción de género, creencias u origen. En especial, la Orden Hospitalaria de San Juan de Dios trabaja en centros sanitarios atendiendo a personas vulnerables y en situaciones muy desfavorecidas, por lo cual, tener unos sistemas de agua apropiados, así como sistemas de excretas eficientes, es algo fundamental para que podamos seguir desarrollando nuestra misión

[1] Cfr. Dicasterio para el Servicio del Desarollo Humano Integral, *Aqua fons vitae. Orientaciones sobre el agua: símbolo del grito de los pobres y del grito de la Tierra.*

«Juandediana» de apoyo a las personas más vulnerables. El aterrizaje de esta iniciativa en proyectos concretos, diseñados con el apoyo del Dicasterio para el Servicio del Desarrollo Humano Integral, ha conseguido evaluar las necesidades existentes en nueve centros sanitarios de la Orden Hospitalaria de San Juan de Dios en África y en América Latina, aflorando los siguientes problemas relacionados con el acceso a WASH:

- Rehabilitación sistemas de abastecimiento agua.
- Tratamiento de desechos.
- Purificación de agua potable.
- Falta de instalaciones para lavarse las manos.
- Renovación y separación de WC por sexos.
- Depósitos de residuos.
- Distribución de agua.
- Carencia de alcantarillado.

La OH de San Juan de Dios ha propuesto los siguientes nueve centros de salud en África y América Latina para ser beneficiarios de este programa:

- Ghana:
    1. St. John of God Clinic Amrahia.
    2. St. John of God Hospital-Asafo.
    3. St John of God Clinic-Oseikojokrom.
- Senegal:
    1. St. John of God – Thiès. Mental Health Center.
- Sierra Leona:
    1. St. John of God's Catholic Hospital, Lunsar.
- Zambia:
    1. Holy Family Rehabilitation Centre, Monze.
- Camerún:
    1. St. John of God Clinic-Yassa-Douala.
    2. Saint John of God Hospital Batibo.
- Perú:
    1. Clínica San Juan de Dios de Iquitos.

En total estamos hablando de unas 307.000 personas que se van a ver impactadas positivamente por estas mejoras en infraestructuras de agua saneamiento, así como 1.758 personas pertenecientes a nuestro personal sanitario.

2. La importancia del WASH en pandemia

Como menciona la Organización de Naciones Unidas[2], la disponibilidad y el acceso a los servicios de agua, saneamiento e higiene (WASH) es fundamental para luchar contra el virus y preservar la salud y el bienestar de millones de personas. La COVID-19 no desaparecerá sin acceso a agua salubre para las personas que viven en situaciones de vulnerabilidad, de acuerdo con los expertos de Naciones Unidas.

Los efectos de la COVID-19 podrían llegar a ser considerablemente más graves sobre la población urbana pobre que vive en suburbios y que no tiene acceso a agua limpia. ONU-Hábitat está trabajando con asociados para facilitar el acceso a agua corriente y al lavado de manos en entornos informales.

En los centros de salud, el agua y el saneamiento son ejes esenciales de trabajo, no solamente en época de pandemia, sino en cualquier situación. No podemos aspirar a dar un buen servicio a las personas que vienen apelando a nuestros servicios de salud sin que tengamos unos sistemas de agua y saneamiento aceptables. Adicionalmente a este trabajo que realizamos dentro de nuestros propios centros, también trabajamos con las comunidades adyacentes, ayudándoles a tener sistemas de acceso al agua potable y saneamiento básico en sus propias comunidades, porque consideramos que las enfermedades diarreicas agudas, que son las causantes de grandes males en la salud de las personas, se atajan principalmente si las personas tienen acceso a estos tres pilares: acceso al agua potable, acceso al sistema de saneamiento básico, y sistemas de higiene. Al día de hoy sabemos – y lo podemos experimentar con la pandemia de COVID-19 – que en muchos países para reducir las enfermedades diarreicas agudas es más importante un buen lavado de manos que incluso una ingesta de agua tratada con sistemas de purificación. Y esto es así porque a través de la falta de higiene se producen muchísimas enfermedades infecciosas.

El agua y el saneamiento son derechos humanos esenciales, por los que se lleva trabajando muchos años para que sean reconocidos por las Na-

[2] Cfr. Naciones Unidas, *Agua limpia y saneamiento*, https://tinyurl.com/46976feu.

ciones Unidas. Actualmente, muchas organizaciones sociales, civiles y religiosas estamos trabajando para que los dos mil 100 millones de personas que todavía no tienen acceso al agua potable puedan tenerlo y así mejoren sus condiciones de vida. Y evidentemente, la mayoría de estas personas están concentradas en determinados contextos como son el africano y el latinoamericano. Es ahí donde tenemos que poner nuestros esfuerzos para evitar que algo que es esencial, algo que es vida, sea un derecho universal para todas las personas.

3. El apoyo de las instituciones de Iglesia y del sector privado

Desde la Orden Hospitalaria de San Juan de Dios en España, estamos trabajando muy estrechamente con otras instituciones de la Iglesia en la provisión de recursos para ayudarnos a desarrollar proyectos de cooperación para el desarrollo en África, América Latina y Asia. En concreto, contamos con el apoyo de la Conferencia Episcopal Italiana que nos ayuda en la financiación de algunos proyectos, y con la Curia General de la Orden Hospitalaria de San Juan de Dios en Roma. Asimismo, nos dotamos de recursos de administraciones públicas tanto en España como a nivel europeo. Sin embargo, estamos encontrando problemas para acceder a financiación local, especialmente en África, puesto que es un continente donde las estructuras de financiación y de apoyo a los proyectos de desarrollo desde el ámbito público no están todavía desarrolladas. En América Latina seguimos en exploración de posibles financiadores y donantes en el ámbito local, pero al día de hoy no hemos conseguido tener éxito. Por lo tanto, la Iglesia Católica desde Roma, tanto desde el Vaticano a través del Dicasterio para el Desarrollo Humano Integral, como desde la Curia General de la Orden Hospitalaria de San Juan de Dios y la Conferencia Episcopal Italiana, son actores fundamentales para el desarrollo de proyectos de cooperación para el desarrollo en el ámbito de la salud, que es el foco que tiene la Orden Hospitalaria de San Juan de Dios.

Lo que sí es destacable, es la necesaria incorporación del sector privado a la financiación de proyectos de acceso a WASH, que podríamos resumir en estos tres motivos:

- Porque las empresas pueden y deben aportar en la mejora de la sociedad, generando valor social a la vez que empresarial.

- Porque contribuyen a la transformación de la sociedad a través de muchas vías (formación de capital humano; participación de sus empleados; involucración de clientes y proveedores...).
- Porque necesitan acercarse a la sociedad en la que operan, más allá de la relación proveedor-cliente, integrando las expectativas de sus grupos de interés.

El siguiente cuadro puede resumir el retorno del apoyo del sector privado a proyectos WASH:

Valor apoyo del sector privado a proyectos WASH *(inspirado por Fundación SERES y McKinsey)*								
Crecimiento			Gestión del riesgo			Retorno del capital		
Acceso a nuevos mercados	Innovación y nuevos productos	Posiciona-miento social	Cadena de valor y operaciones sostenibles	Posiciona-miento social	Relaciones con instituciones	Operaciones sostenibles	Cadena de valor responsable	Condiciones laborales sostenibles

Finalmente, y como dijo el Santo Padre en el Ángelus del domingo 21 de marzo de 2021 «el agua no debe ser una "mercancía"», pues es un elemento básico para la vida. Una persona puede estar sin alimentarse semanas, pero no más de 3 días sin beber agua. El agua tiene que ser de acceso libre y universal para todos los habitantes del planeta.

INTERVENTION EN OUVERTURE DU SÉMINAIRE

Son Eminence le Cardinal Silvano Maria Tomasi

Nonce Apostolique, Délégué Spécial du Saint-Siège auprès l'Ordre de Souverain de Malte.

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Date de soumission : 24 mars 2021

Mots clé : paix, dignité humaine, droits humains et politique.

Bonjour à toutes et à tous depuis le Vatican. Merci Madame Fisher pour cette belle prière.

Une salutation chaleureuse à Madame Josianne Gauthier, Secrétaire générale de la CIDSE et à toute son équipe qui a travaillé avec le Dicastère pour le Service du Développement Humain Intégral.

C'est une grande joie d'avoir réunis des experts de haut niveau qui représentent l'Amérique du Nord, l'Afrique, l'Europe et le Moyen Orient. A chacun je souhaite la bienvenue. Ayant travaillé et vécu longtemps dans la Corne de l'Afrique, je sais à quel point les enjeux hydriques sont sérieux, notamment lorsqu'il s'agit de sécheresses ou de l'impact politique que peut susciter la construction d'un barrage.

Monsieur Muhiya et Monsieur Comair : à titre personnel permettez-moi de vous assurer de ma profonde sympathie et de ma prière pour vos pays respectifs (R.D. Congo et Liban) qui ont récemment connu plusieurs difficultés graves. L'Eglise est à vos côtés.

Monsieur Sene : la communauté internationale et les experts des sujets hydriques avaient rendez-vous avec le Sénégal en ce mois de mars 2021, mais le Forum Mondial de l'Eau de Dakar ne pouvait bien entendu pas avoir lieu en de telles circonstances. J'espère que ce sommet à Dakar pourra se faire en 2022, et vous assure que le Saint-Siège compte bien y contribuer. Je prie aussi afin que la jeunesse du Sénégal chemine vers la paix, l'emploi, la fraternité.

Madame Di Domenico : à vous seule vous représentez le réseau CIDSE et la Confédération Caritas, deux familles avec lesquelles le Dicastère travaille beaucoup. Merci pour ce que vous nous apporterez. Mon encouragement aux organisations catholiques des Amériques qui travaillent souvent au contact de

populations indigènes ou des 'premières nations', et s'engagent pour défendre la dignité de ces personnes et protéger leur environnement, donc aussi leur eau.

Je souhaite la bienvenue également à tous les participants qui nous ont rejoints. A tous ceux qui, quelques jours après la Journée Mondiale de l'Eau, s'intéressent au sujet fascinant de l'eau et du développement humain intégral.

Quelques grandes questions peuvent se poser à nous :

Un certain modèle de développement a mis en danger l'eau dont nous avons besoin, notamment en la polluant et en accroissant des déséquilibres dans l'accès. Sommes-nous en train de discerner les erreurs dans ce modèle de développement et donc de changer de cap ?

Allons-nous vers un accès adéquat de tous à l'eau potable et à l'assainissement, comme le demande la dignité humaine, comme l'indique le 6ème Objectif de l'ONU pour le développement durable ? Mais, lundi dernier (22 mars), les représentants des Nations Unies nous ont rappelé que nous ne sommes pas du tout acheminés pour atteindre cet objectif ! Que faire pour accroitre la volonté politique dans la bonne direction ? Lors de mes années de service à Genève, combien de fois il a fallu insister, encore et encore, sur le droit humain d'accèdes à l'eau potable et à l'assainissement. Il faut continuer à insister.

Arrivons-nous à avoir vis-à-vis de l'eau une approche intégrale, qui unisse toutes les disciplines afin de la gérer harmonieusement, respectueusement, efficacement pour le bien commun de toute la famille humaine tout en respectant l'ensemble de la création ? Au lieu d'approches 'en silo' ? Au lieu d'approches prédatrices, qui ne s'efforcent pas de reconnaitre – humblement – que l'eau est avant tout un don.

Voulons-nous rester dans une narrative et une approche de géopolitique, de nationalismes et de particularismes exacerbés, dans laquelle l'eau est un enjeu de rivalités, de conflit ? Ou bien allons-nous apprendre à promouvoir et à construire des ponts pour aller l'un vers l'autre ? A construire ensemble des puits et, ensemble, à en assurer la maintenance ? Ensemble à éduquer à la valeur de l'eau ?

Les diverses religions peuvent-elles ensemble travailler sur ces grands enjeux hydriques ? Je l'espère.

Dimanche, le Pape invitait justement « à réfléchir sur la valeur de ce don de Dieu merveilleux et irremplaçable. Pour nous croyants, 'sœur eau' n'est pas une marchandise : elle est un symbole universel et elle est une source de vie et de santé. Trop de nos frères, beaucoup, beaucoup de nos frères et sœurs n'ont

accès qu'à peu d'eau et souvent polluée ! Il est nécessaire d'assurer à tous de l'eau potable et des services hygiéniques. Je remercie et j'encourage ceux qui, grâce à leurs différents professionnalismes et responsabilités, travaillent dans ce but aussi important ». Attention donc à la valeur que nous donnons à l'eau !

Je suis certain que ce webinaire, le troisième dans une série de cinq organisée par notre Dicastère pendant cette semaine, pourra inspirer tous les participants à ce sujet.

Je prie afin que le Tout-Puissant vous bénisse et vous protège. Tous mes vœux pour la suite de ce webinaire.

EAU ET DÉVELOPPEMENT HUMAIN, EAU ET RELIGION AU SÉNÉGAL

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1. Introduction

Dans de nombreuses religions, il existe des récits sur différentes formes d'eau. Entre autres choses, ces récits disent que le monde a été créé à partir de l'eau, qu'il y avait des luttes entre l'eau douce et l'eau salée dans l'histoire ancienne du monde, qu'il y a eu autrefois « une grande inondation » qui a tué presque tous les êtres vivants sur la terre, ou que les créatures dangereuses tentent d'attirer les gens dans la mer.

L'eau est en effet l'une des métaphores religieuses les plus courantes, représentant des choses aussi différentes que la « connaissance », la « vie », le « salut » et le « temps », pour ne citer que quelques exemples. Elle est source de toute vie et en même temps essentielle pour l'Homme et la Nature, comme en attestent de nombreux passages de la Bible et des versets du Coran.

Le Coran nous dit : « Nous avons tiré toute matière vivante de l'eau » (s. 21, v. 30). Cette affirmation est aujourd'hui très largement corroborée par la Science. Certaines confessions utilisent de l'eau spécialement préparée à des fins religieuses (eau bénite dans la plupart des confessions chrétiennes).

De nombreuses religions considèrent également que des sources ou des plans d'eau particuliers sont sacrés ou du moins de bon augure. Nous citerons par exemple Lourdes dans le catholicisme romain, le Jourdain dans certaines églises chrétiennes, le puits Zamzam dans l'Islam et le Gange dans l'Hindouisme.

Aujourd'hui dans nos sociétés dites modernes, l'eau est considérée comme un produit qu'on trouve au robinet et qu'on paie à une société cotée en Bourse. L'eau est donc pour nous essentiellement une réalité naturelle, transformée en

objet scientifique et de plus en plus une marchandise. Cette double problématique, qui est en train de s'universaliser sur toute la planète, est cependant fort récente. Elle s'est installée dans le monde occidental, ces deux derniers siècles, par la révolution conjointe de la science moderne et du capitalisme, qui ont en commun d'imposer au monde et à ses objets, comme disait le philosophe Max Weber, un processus de rationalisation et de désenchantement.

2. L'eau et les croyances africaines

Avant d'être un objet d'investigations scientifiques et d'enjeux de conflits, l'eau est d'abord, un élément relevant de l'imagination humaine. La représentation fait appel à la religion, à la spiritualité, aux mythes et légendes, et aux rituels. L'eau a longtemps revêtu plusieurs aspects dans les croyances et les religions des peuples. Ainsi, depuis l'antiquité aux religions actuelles, l'eau est toujours présente sous différents aspects : destructrice, purificatrice, source de vie, guérisseuse et protectrice, moyen de purification, centre de régénération ; ces trois formes se rencontrent dans les traditions négro-africaines.

Dans nos sociétés africaines, l'eau a de tout temps fasciné nos croyances traditionnelles locales. Elle participe à la fertilité des champs, à la fécondité des êtres et des choses. Chaque forme d'eau : pluie, rivière, source, mare, lac, mer, eau recueillie dans le creux d'un arbre, rosée etc. est investie d'une signification particulière. Chez certains groupes ethniques, le père bénit sa fille le jour du mariage avec de l'eau où trempent des feuilles qui symbolise la douceur, la concorde. La purification qui est indissociable des rites d'initiation, élimine les souillures intérieures, chasse les forces maléfiques et protège les initiés. Ainsi, à la fin de leur initiation, les néophytes en pays Bambaras, reçoivent une aspersion d'eau projetée par la bouche du chef de la société des initiés. Ils sont ensuite lavés une première fois par un ancien initié, avec de l'eau puisée dans la mare sacrée du village, et une seconde fois au puits sacré du village.

L'eau, séjour des esprits, joue un important rôle dans les cérémonies, d'où le caractère magique des sources, des rivières et des cascades, et le geste de répandre de l'eau devant les autels au début de toute cérémonie afin de convoquer les esprits du monde invisible. L'eau fonde aussi le pouvoir temporel et religieux de groupes d'initiés, généralement constitués en sociétés secrètes qui s'approprient par des moyens surnaturels les attributs magiques des génies aquatiques (ex : Mame Coumba Bang à Saint Louis). Enfin, l'eau est une matière précieuse dont la raréfaction est une véritable catastrophe naturelle. La

vie du paysan est littéralement suspendue au régime des pluies : que la pluie vienne à manquer, qu'elle tarde ou soit trop abondante, alors le paysan multiplie les rituels et les invocations qui tissent la trame de la civilisation rurale. De nombreux mythes expliquent l'origine de ces pratiques (ex : Baaw Naan en pays Wolof ou Khoy chez les Sérères). Chez les Seereer, l'eau est aussi associée à la création. Henry Gravrand écrit à ce sujet : « La formation de la terre a commencé par un marécage. La conception du chaos initial donne une idée du premier stade de la création qu'on retrouve dans la cosmogonie sérère ». Dans le Fuuta, les populations prennent l'eau de pluie pour la boire ou pour se laver, elles pensent ainsi se débarrasser de plusieurs maladies car elles croient ainsi boire une partie du divin dans le ciel. Cette croyance en la sacralité de l'eau céleste est logique puisqu'elle provient de ce fleuve céleste sur lequel naviguent les divinités. Chez les Haalpulaaren l'eau est un élément de très grand symbolisme. En effet, un des premiers rituels à la naissance d'un enfant se dit *pukam* (l'eau du premier bain) alors que le second acte est le *to66am* (aliment introductif). Cet aliment est rarement le lait maternel. Le nouveau-né est ainsi introduit dans la société avec l'eau du *pukam* et le lait ou avec l'eau du *to66am*. Le lait est tout simplement une eau spéciale selon le Prof. Aboubacry M. Lam. On comprend ainsi pourquoi dans toute l'Afrique noire, l'eau de la pluie est vue comme une faveur divine puisque le divin est dans les Cieux.

3. L'eau et les religions révélées

L'eau est présente dans tout ce que l'Africain en général et le Sénégalais en particulier a conçu et plus profondément encore dans sa pensée religieuse. L'eau était partout perçue comme une grâce divine. Ce recours permanent à l'eau se retrouve dans l'Islam, et il est très logique puisque dans l'univers nègro-africain, dans l'Islam ou dans le Christianisme, la création jaillit de l'eau et se nourrit d'elle.

Les religions du livre (Judaïsme, Christianisme et Islam) ont toutes, pris naissance dans des zones désertiques où l'eau est rare et donc considérée comme un bien précieux et un véritable « don de Dieu ». Dans la Bible tout comme dans le Coran, une relation étroite est établie entre la vie sur terre et l'eau céleste.

Le Coran dira à cet effet : « En vérité, la vie de ce monde est comparable à l'eau que Nous faisons descendre du ciel et grâce à laquelle toutes sortes de plantes dont se nourrissent les hommes et les bêtes s'entremêlent sur le sol… »

(*Coran* 10 : 24 ; 13 : 17 et 14 : 32). Dans l'Islam, la description du paradis céleste laisse encore clairement apparaître la présence de l'eau : « Le Paradis promis à ceux qui craignent Dieu est à l'image d'un Jardin sous lequel coulent des ruisseaux, aux fruits éternels et aux ombrages perpétuels. Telle sera la demeure des hommes pieux… » (*Coran* 13 : 35). L'eau est perçue comme la semence divine. Cette notion de semence divine veut simplement dire que cette matière est présente dans tout ce que le divin a créé. C'est aussi ce que nous dit un autre verset du Coran : « Nous avons tiré toute matière vivante de l'eau… ». Cette déclaration puissante du Coran résume l'importance de l'eau dans l'Islam.

Les déclarations concernant l'eau commencent souvent par « C'est Dieu... C'est Lui qui... », rappelant ainsi aux humains que l'origine de l'eau douce est avec Dieu : « Considérez l'eau que vous buvez. Est-ce toi qui l'as fait tomber du nuage de pluie ou nous ? S'il nous avait plu, nous pourrions la rendre amère : pourquoi alors ne pas rendre grâce ? ».

Il est également important de souligner que dans le Coran, parmi les promesses du Paradis, figurent les deux éléments que sont l'eau et le lait : « Voici l'image du Paradis promis aux croyants : il y coulera des ruisseaux à l'eau toujours pure et limpide, des ruisseaux de lait à la saveur inaltérable… ».

Les règles de pureté islamique forment un système qui requiert qu'avant tout acte religieux, il faut se purifier, se nettoyer en se lavant le visage et les mains aux coudes, et frotter la tête et les jambes aux chevilles. Ce rituel purificateur s'appelle « ablution ». En l'absence d'eau, l'ablution peut se faire en utilisant du sable fin. La purification n'est donc pas la propreté au sens hygiénique, mais plutôt au sens rituel. En effet, l'ablution libère le musulman des restrictions rituelles, et l'ablution est l'une des caractéristiques les plus importantes et dominantes de la vie rituelle islamique. Avant chaque prière, le musulman doit être purifié. Il existe deux types d'ablution, l'ablution mineure et l'ablution majeure. L'ablution est décrite dans le Coran comme un moyen de purification physique, psychologique et spirituelle et édifiante, et par conséquent, il est indiqué dans le Coran que Dieu « envoie de l'eau du ciel pour vous purifier » (*Coran* 8 : 11), et comme le Prophète PSL l'a dit, « la propreté fait partie de la foi ». La propreté est en effet un moyen de compléter sa foi, la perfection de l'éclat de Dieu, et la porte d'entrée vers la prière et la lecture du Coran et donc d'atteindre l'amour de Dieu. L'eau n'est pas simplement associée à la vie ; elle est aussi associée à la mort. Un bain rituel dans de

l'eau pure est pratiqué pour les morts dans de nombreuses religions dont le Judaïsme et l'Islam.

Le coté divin et purificateur de l'eau est également très présent dans le Christianisme. Le baptême avec de l'eau bénite est un important rite chez les Catholiques. L'eau est également utilisée pour purifier l'autel avant les messes. Il existe en réalité sur la question de l'eau, une profonde similitude entre les religions révélées (le Judaïsme, le Christianisme et l'Islam) et les religions traditionnelles africaines. Cette similitude commence avec l'eau, l'élément de base de la création et trône du Créateur, et se poursuit avec l'argile, cette autre matière utilisée par la Divinité Suprême pour créer le premier humain avant de l'animer par la puissance du Verbe Créateur.

4. L'eau une priorité pour le Vatican

La question de l'eau est cruciale pas seulement pour la pratique religieuse comme nous avons essayé de le montrer mais aussi et surtout pour la paix et le développement, en Afrique et particulièrement au Sénégal car la concurrence pour l'accès à l'eau sera inévitable dans le futur.

Dans sa Lettre Encyclique *Laudato si'* sur la Sauvegarde de la Maison Commune, du 24 mai 2015, Sa Sainteté le Pape nous rappelle que le climat est un bien commun, de tous et pour tous et que beaucoup de personnes dont la vie dépend très largement de l'exploitation et la mise en valeurs des ressources naturelles de la planète sont contraints chaque jour de devenir des réfugiés climatiques. Elles n'ont pas d'autres activités financières ni d'autres ressources qui leur permettent de s'adapter aux impacts climatiques. Sa Sainteté le Pape rappelle également que : « L'accès à l'eau potable et sûre est un droit humain primordial, fondamental et universel, parce qu'il détermine la survie des personnes, et par conséquent il est une condition pour l'exercice des autres droits humains » ; que le monde a une grave dette sociale envers les pauvres qui n'ont pas accès à l'eau potable, parce que « c'est leur nier le droit à la vie, enraciné dans leur dignité inaliénable ». Les questions soulevées par sa Sainteté le Pape dans sa Lettre Encyclique démontre si besoin en était la pertinence du choix du thème du prochain Forum Mondial de l'Eau « La sécurité de l'eau pour la paix et le développement » qui se tiendra au Sénégal du 21 au 26 Mars 2022.

5. Le 9ème Forum Mondial de l'Eau : « Dakar 2022 »

Après son élection comme membre du panel mondial de haut niveau sur l'eau et la paix et du panel mondial de haut niveau sur l'eau, le Sénégal a lancé le premier débat formel sur « L'Eau, la Paix et la Sécurité » lors de sa présidence du Conseil de sécurité des Nations Unies en novembre 2016, pour promouvoir la réflexion sur les moyens de faire de l'eau un outil de développement économique et un moyen privilégié de coopération.

Les performances du Sénégal en matière de diplomatie et de politiques liées à l'eau ont permis au pays d'être choisi comme pays hôte du 9ème Forum Mondial de l'Eau, dont le thème est : « La sécurité de l'eau pour la paix et le développement ». C'est, une fois de plus, un témoignage de l'engagement du Sénégal à contribuer à la promotion et à la garantie de la sécurité mondiale de l'eau.

Aujourd'hui, le monde est fondamentalement secoué par de multiples crises qui sapent les fondements de nos économies, de nos sociétés et surtout de notre environnement. Le 9ème Forum Mondial de l'Eau « Dakar 2022 » abordera les questions de l'eau pour l'humanité et la nature. L'objectif est d'accélérer la mise en œuvre effective de l'agenda mondial de l'eau, condition indispensable pour la réalisation des ODDs.

L'ambition du Sénégal et du Conseil Mondial de l'Eau est d'organiser un Forum plus efficace socialement, politiquement et économiquement, un Forum catalyseur pour l'action sur les engagements en matière d'eau et d'assainissement dans les différentes régions du monde. Il permettra à la communauté internationale de discuter de la capacité de celle-ci à relever les défis actuels et futurs en matière d'eau.

Ce Forum de réponses vient magnifier les performances du Sénégal en matière d'hydro-diplomatie et d'hydro-sécurité, et *offre* une excellente occasion de remettre l'eau au cœur de l'agenda politique international de construction de la paix, dans le contexte de la relance de l'économie post-COVID-19 qui doit être plus résiliente et solidaire.

Le Forum de Dakar se veut un levier catalyseur pour les engagements internationaux sur la sécurité de l'eau et la réalisation des ODD. Il est organisé à mi-chemin de la mise en œuvre des ODD. Il sera lié à l'agenda, sur les ODD, à l'Accord de Sendai sur les risques naturels et les catastrophes, à l'Accord de Paris sur le climat, à l'Agenda 2063 de l'Afrique, etc. Il se veut un Forum

contextualisé, à la fois mondial et local, enraciné dans les grands défis de l'eau de l'Afrique et du monde.

Le Forum sera aussi une étape clé dans le processus préparatoire de la Conférence des Nations Unies sur l'eau prévue en 2023. Il adressera les problèmes et défis cruciaux de l'eau et proposera des solutions pour l'Afrique et le monde à travers l'hydro diplomatie et la coopération pour l'intégration régionale, conditions *sine qua non* pour la paix, la stabilité et la sécurité. Les décisions politiques qui seront prises lors du Sommet des Chefs d'Etat, tout comme les leçons apprises au Sénégal et dans d'autres pays et plus globalement les résultats du 9éme Forum alimenteront sans nul doute la réflexion et le contenu de la Conférence globale sur l'eau de 2023.

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LES ENJEUX EXISTENTIELS ET LA VALORISATION DE LA CULTURE DE LA PAIX HYDRIQUE

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1. L'eau : une richesse menacée

Depuis le commencement du monde, la plupart des activités humaines, qu'elles soient économiques ou sociales, utilisent l'eau comme facteur indissociable de toute vie. Ce patrimoine naturel qui fait partie intégrante de l'humanité porte en lui l'un des plus grands défis pour notre planète. Inéluctablement, cette ressource essentielle au développement durable se raréfie. L'eau est déjà sans nul doute l'or bleu du XXI^{ème} siècle.

Aujourd'hui, l'eau partagée entre les pays riverains constitue un facteur de tensions et de conflits majeurs. La gestion unilatérale des ressources hydriques et l'absence d'une politique de coopération convenable freinent la réalisation de la paix hydrique et engendrent une multitude de bouleversements qui menacent plus que jamais la gestion des bassins transfrontaliers.

Il est utile de noter que le partage équitable de l'eau doit être inclus dans un schéma global de développement socio-économique des bassins internationaux impliquant une coopération hydrodiplomatique entre les pays riverains. C'est certainement la première condition à remplir afin d'éloigner le spectre conflictuel hydrique.

C'est la raison pour laquelle l'eau se place au cœur des débats entre les Etats et s'inscrit désormais sur l'agenda des organisations onusiennes telles que le Programme Hydrologique Intergouvernemental de l'UNESCO dans le cadre de la promulgation des stratégies décennales, et notamment celle de la prochaine décennie la stratégie IX 2021-2029.

L'application du concept de l'hydrodiplomatie constitue un choix politique pour les Etats se partageant un bassin transfrontalier dans le but de générer des bienfaits et aboutir à assoir une diplomatie environnementale répondant aux Objectifs du Développement Durable.

2. Qu'est-ce que l'hydrodiplomatie ?

L'hyrodiplomatie est un outil au service de la construction d'une gestion intégrée des ressources en eau, nationale et transnationale, selon un modèle coopératif, loin de la logique fragmentée, sécuritaire ou hégémonique qui compromet de plus en plus le développement socio-économique de nombreux pays.

L'hydrodiplomatie veut construire une nouvelle forme de gouvernance qui porte l'ambition de construire la paix, un processus pour la prévention, la médiation et la résolution des conflits sur l'eau. Il s'agit d'exclure toute forme de domination d'un pays sur l'autre, d'éloigner la militarisation de l'accès aux sources d'eau et de repousser le concept de gestion sécuritaire ou hégémonique de la ressource.

Les objectifs principaux de l'hydrodiplomatie sont donc :

- D'éloigner les tensions au niveau des bassins versants en faisant de l'eau non une source de conflit mais un catalyseur de paix.
- De sécuriser la ressource en eau et l'alimentation pour les générations présentes et futures dans le respect des principes du développement durable.
- De créer une dynamique de développement économique régionale intégrant le nexus eau-énergie-alimentation qui relie différents facteurs interdépendants du développement économique et social des pays concernés.

Pour parvenir à ses fins, l'hydrodiplomatie mobilise à la fois l'expertise technique et la diplomatie. Elle associe les diplomates, les experts scientifiques, les académiciens et les décideurs politiques au niveau des bassins transfrontaliers, afin de parvenir à un partage équitable et à une utilisation raisonnable de l'eau en vue d'aboutir à une situation de succès mutuels, de type « gagnant-gagnant », entre pays et régions riveraines.

Il faut bien garder présent à l'esprit que la tâche de l'hydrodiplomatie ne se limite pas à la conclusion d'accords sur le partage de la ressource en eau.

C'est un processus continu, qui se poursuit une fois les accords conclus, pour entretenir la culture de la paix et de l'eau sur une base permanente, en faisant fonctionner des institutions partagées chargées de leur gouvernance.

Ce processus crée un environnement géopolitique plus stable et favorable aux échanges de données techniques entre les pays.

L'acceptation et l'utilisation croissante de la notion de « Nexus » Ecosystèmes Eau – Energie – Alimentation dans l'agenda international élargit la portée et le potentiel de l'hydrodiplomatie, puisque « Nexus » encapsule l'interdépendance entre de nombreux aspects importants de la vie et de l'économie des sociétés et des pays et, par conséquent, des relations critiques avec leurs voisins sur des questions d'une importance particulière pour la sécurité des ressources naturelles et le développement humain.

L'approche de Nexus en Méditerranée et au Moyen-Orient en particulier, pourrait être utilisée comme un outil d'hydrodiplomatie prometteur d'intégration et d'équilibre, permettant aux secteurs et aux négociations au-delà de ceux qui sont directement liés à l'eau, de contribuer à des accords viables et mutuellement bénéfiques avec des gains socio-économiques potentiellement importants pour les parties concernées. De même, l'hydrodiplomatie pourrait contribuer à des accords équilibrés impliquant toutes les composantes du Nexus.

L'hydrodiplomatie basée sur une haute éthique et transparence dans la prise de décision, en particulier concernant les infrastructures d'eau, pourrait grandement renforcer la confiance mutuelle et la coopération constructive pour le partage des avantages de l'eau.

En tenant compte de la complexité des questions géopolitiques au Moyen-Orient, une coopération hydrodiplomatique régionale plus systématique est nécessaire afin de cultiver une approche sur le partage juste et équitable des ressources fondée sur la connaissance, de renforcer la confiance et d'élaborer des moyens d'éviter la menace de conflit.

La promotion des dialogues sur l'hydrodiplomatie en combinaison avec des initiatives de coopération régionale peut être très utile, surtout si assistée par des activités de renforcement des capacités sur l'hydrodiplomatie pour les parties prenantes et les experts clés impliqués, y compris les jeunes diplomates, les parlementaires et les personnes employées dans les médias.

Renforcer la culture de l'eau et de la responsabilité par une éducation appropriée, au niveau des ménages, et aux niveaux locaux, nationaux et transfrontaliers, pourrait contribuer à aborder non seulement les défis de l'eau (par

exemple en réduisant le gaspillage de l'eau et de la pollution), mais aussi la réduction des malentendus et des idées fausses parmi les voisins, contribuant ainsi à la compréhension internationale qui est une condition préalable essentielle pour le développement durable en Méditerranée.

2.1. *La région méditerranéenne en un clin d'œil*

Compte-tenu des enjeux complexes du développement durable dans la région méditerranéenne et des défis majeurs qui pèsent sur la région du Moyen-Orient, il est important de trouver des solutions durables pour palier à la pénurie d'eau et offrir aux générations futures une paix durable pour la région.

L'eau serait alors un moteur pour l'entente et l'application de la « Culture de la paix » au Proche-Orient et nous aurons tous à faire des choix très douloureux entre : un présent basé sur la culture de la haine ou bien un futur consolidé par une paix durable.

Quelques idées directrices sont proposées dans le but d'assurer la réussite de l'hydrodiplomatie et du développement durable des bassins transfrontaliers avec les faits suivants :

- Aujourd'hui des millions de gens au Proche-Orient n'ont pas accès à des quantités d'eau suffisante. La rareté de l'eau est la plus grande menace pour la sécurité humaine et alimentaire dans la région. C'est pour cela que les bassins internationaux peuvent occasionner des foyers de tensions entre les nations voisines : une coopération à l'amont entre les Etats riverains peut prévenir des conflits potentiels. L'utilisation de la convention des Nations Unies (1997) pourra favoriser la situation « Gagnant-Gagnant » entre les Nations et aboutir à l'élaboration d'un traité durable dans le temps.
- Les institutions internationales telles que l'ONU ou bien l'Union Européenne œuvrent à un rapprochement entre les Etats riverains hostiles et proposent un système de gestion qui s'adapte aux conditions politiques régionales. Ce concept favorise le développement des bienfaits économiques directs et indirects entre les nations.
- La détérioration graduelle de la qualité et la gestion irrationnelle de la quantité de l'eau, affecte la crédibilité et la stabilité d'une nation et même parfois la stabilité de toute la région avoisinante. Le concept d'intégration au niveau du bassin exige le recours à de nouvelles techniques de surveillance de la qualité et de la quantité de la ressource. Ce contrôle se fera par un système de mesure télémétrique tout le long du cours d'eau.

- Les traités négociés entre les nations doivent inclure des critères clairs et flexibles sur l'allocation de la ressource ainsi que sur la préservation de sa qualité. Ces clauses diminuent les éventuelles tensions entre les Etats et favorisent un climat politique positif dans la région. Les institutions internationales telles que les Nations Unies et l'Union Européenne proposent des programmes de recherches et des modules d'éducation au niveau du bassin régional dans le but d'assurer le développement durable du cours d'eau.

Ces institutions aident à identifier des mécanismes clairs pour la gestion intégrée de la ressource en considérant aussi les besoins sociaux du bassin. La politique tarifaire doit prendre en compte la présence des classes sociales défavorisées.

- Quelques Etats riverains peuvent considérer certains usages comme prioritaires. Pour cela la gestion par compensation financière peut être adoptée et exigée par les autres nations du bassin dans le but de limiter les conflits.
- La distribution équitable entre les pays riverains est le moyen adéquat pour assurer une bonne gestion du système. L'idée est que la distribution de l'eau se fait dans un but bénéfique. Ceci permet l'élaboration d'accords équitables pour les différentes parties.
- Un mécanisme détaillé doit être mis en place pour résoudre les éventuels conflits entre les pays riverains. Il est essentiel de former des experts dans chaque pays concerné afin d'aboutir en cas de litige à des solutions équitables. Les institutions internationales proposent des programmes de formation pour les experts des pays riverains. Ces programmes sont très utiles pour la pratique des négociations hydrodiplomatiques.

Ces réflexions pourraient constituer une base commune pour la consolidation d'un processus dynamique de partage des ressources en eau au Proche-Orient. L'intégration des acteurs principaux de l'eau dans une dynamique de coopération au niveau des bassins régionaux contribuera positivement au développement économique et social des pays riverains. Les perspectives d'avenir permettront de relever les défis et de créer des opportunités pour cultiver la paix au Proche-Orient.

3. Le monde d'aujourd'hui

Nous vivons une époque qui se caractérise par des risques sans précédent, mais aussi par de formidables perspectives pour l'avenir de notre planète.

Les systèmes naturels nécessaires à la vie subissent les conséquences de ce que de nombreux scientifiques considèrent comme les plus grands défis de notre temps, notamment les changements des modes de vie et de consommation, la croissance démographique, l'urbanisation et les changements climatiques, leurs répercussions sur les comportements hydrologiques, la disponibilité d'eau douce pour la consommation humaine et le développement durable et les effets combinés des phénomènes climatiques extrêmes. Le problème de la COVID-19 a resserré les conditions limites, notamment la possibilité d'interaction des êtres humains et leur capacité à faire face à des aléas simultanés en cascade.

Cette pandémie a démontré l'importance de la science, de la recherche et de la technologie ainsi que le besoin de coopération et de transparence pour tout ce qui concerne le partage des données et des enseignements dans l'intérêt collectif de la communauté internationale.

Le rythme croissant auquel s'opèrent les changements environnementaux étroitement liés aux comportements humains exige d'approfondir les connaissances en hydrologie.

Les interactions entre activités humaines et systèmes hydrologiques doivent être prises en compte dans l'élaboration des scénarios de gestion des ressources en eau.

4. L'UNESCO : une stratégie de survie et de la pérennité humaine

Le PHI-UNESCO a voulu offrir un espace et un lien pour étendre la coopération au sein de la communauté scientifique internationale et contribue aussi à traiter de nombreux problèmes non résolus dans le domaine de l'hydrologie.

Le plan stratégique de la neuvième phase du Programme Hydrologique Intergouvernemental (PHI-IX) de l'UNESCO pour la prochaine décennie 2022-2029 intitulé : « La science pour un monde où la sécurité de l'eau est assurée dans un environnement en mutation », définissant les principaux domaines prioritaires à savoir :

- Recherche scientifique et innovation.
- L'éducation relative à l'eau, de la révolution industrielle à la révolution écologique.
- Réduction du fossé entre données et connaissances.

- Gestion inclusive de l'eau dans un contexte de changements à l'échelle planétaire.
- La gouvernance de l'eau sur des bases scientifiques aux fins d'atténuation, d'adaptation et de résilience.

Cette démarche aidera les Etats membres à mettre en avance le programme 2030 et à atteindre les objectifs de développement durable et plus particulièrement les ODD relatifs à l'eau ainsi que les autres programmes hydriques mondiaux tels que l'accord de Paris sur le climat, le cadre de Sendai pour la réduction des risques de catastrophes et le nouveau programme pour les villes.

Le processus d'élaboration du plan stratégique a été fortement participatif. Les contributions d'experts régionaux et membres du bureau du Conseil du PHI ainsi que la famille de l'eau de l'UNESCO, des organisations partenaires et des agences des Nations Unies ont été recueillies lors des consultations successives, apportant des observations substantielles et utiles.

Il faut aussi sans aucun doute mettre en relief l'analogie de nos travaux avec le rapport de l'Assemblée Nationale de 2011 qui a bien explicité l'importance que l'eau revêt pour notre existence : « Élément de la vie quotidienne, l'eau est si familière que l'on en oublie souvent l'importance et l'originalité. L'eau est liée à l'homme, plus, à la vie, par une familiarité de toujours, par un rapport de nécessité multiple en vertu duquel son unicité se dissimule sous le vêtement de l'habitude ».

La mise en œuvre de la phase IX du PHI sera guidée par deux documents étroitement reliés :

1. Le plan stratégique qui fixe les 5 priorités déjà citées en lien avec l'eau à l'intention des Etats membres.
2. Le plan opérationnel de mise en œuvre qui permettra de suivre, grâce aux actions proposées et aux indicateurs correspondants, les progrès dans l'exécution du plan stratégique.

Le plan stratégique IX de l'UNESCO a pour objet de définir un axe stratégique convaincant pour la phase 2022-2029. Il représente une réponse méthodologique transdisciplinaire pour trouver des solutions pour un monde où la sécurité de l'eau est assurée dans un contexte complexe. L'approche et les priorités qui figurent dans ce plan sont en adéquation avec les principales missions de l'UNESCO dans le domaine de la science et de l'éducation et vise à répondre aux besoins des Etats membres en les aidant à tirer parti des

progrès scientifiques et technologiques pour relever les défis mondiaux liés à l'eau.

En se basant sur tout ce qui précède, on voit clairement la convergence entre la Stratégie du PHI de l'UNESCO et le document historique du Vatican.

Partant de là, on note un alignement parfait de nos principes et croyances surtout lorsqu'il est question de la "dimension humaine et relationnelle" qui s'articule autour des divers projets hydriques tout en favorisant, une prise de conscience collective dans le domaine de la sécurité de l'eau et un engagement communautaire dans les enjeux existentiels qui en découlent.

Le haut degré d'interdépendance des pays en matière d'eau et la réduction drastique de la disponibilité de cette ressource – notamment du fait de la variabilité et du changement climatique – ont augmenté de façon notable les risques de conflits internationaux autour de l'eau et ont créé un terrain propice à la guerre hydrique.

C'est la raison pour laquelle, il est indispensable d'imposer des mesures immédiates pour instaurer des politiques de coopération au niveau des cours d'eau internationaux, sinon l'espoir de connaître un avenir à l'abri des conflits entre les pays riverains s'évanouira.

Au fait, l'absence de la coopération retarde l'exécution des projets en question et impacte le développement durable et tous les enjeux y liés.

Les hommes doivent oublier leurs différences raciales, religieuses, ethniques et socio-économiques pour parer à la catastrophe qui nous attend « la guerre de l'eau » qui menacera la planète terre et la survie des nouvelles générations.

Aujourd'hui, nos réflexions pourraient constituer une base commune pour la consolidation d'un processus dynamique de partage des ressources en eau au monde. L'intégration des acteurs principaux de l'eau dans une dynamique de coopération au niveau des bassins régionaux contribuera positivement au développement économique et social des pays riverains. Les perspectives d'avenir permettront de relever les défis, d'atténuer les effets néfastes de la compétition indésirable autour de l'eau, promouvoir une gestion efficace des ressources et créer des opportunités pour cultiver une paix hydrique perpétuelle.

5. Conclusion générale

L'eau, source de tensions et d'instabilité peut aussi être un puissant instrument de coopération et un appel à une intégration régionale pouvant encour-

ager le dialogue sur les eaux transfrontalières en intensifiant les échanges et la communication paisible entre les pays riverains.

Les plans coopératifs nationaux et régionaux doivent être de plus en plus liés. Grâce à cette plus grande connectivité, les pays concernés peuvent avancer conjointement vers un développement économique plus fort aux niveaux régional et national, tout en construisant des interdépendances qui renforcent la confiance et génèrent des processus à long terme d'engagement politique et de coopération. En fin de compte, s'éloigner des perceptions profondément enracinées et adopter d'autres idées réalistes permettra aux pays riverains de franchir le pas vers cette nouvelle ère de coopération régionale basée sur une hydrodiplomatie active et une démarche participative entre les États en questions.

Alliant la science et la politique, l'hydrodiplomatie est donc un outil essentiel pour proposer des solutions techniques susceptibles d'assurer une répartition équitable de l'eau entre les peuples et les États, et de permettre une gestion plus durable de cette ressource.

En mettant en place de bonnes pratiques de coopération, elle ouvre aussi la voie à une gestion mieux intégrée des trois composantes du nexus eau-énergie-alimentation.

Les avis de tous les experts convergent sur le fait qu'une réussite de l'hydrodiplomatie requiert une volonté politique affirmée de la part de chaque pays impliqué. Un manque de consensus entre les pays riverains retarde évidemment la prise de décision et engendre des conséquences négatives sur la gestion du bassin en question et sur le bien-être des populations.

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EAU ET DÉVELOPPEMENT HUMAIN INTÉGRAL – SITUATION DANS LE BASSIN DU CONGO

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Mots clé : hydrographie, Congo, usages de l'eau, barrages, voies navigables et lacs en Afrique, assèchement, pollution, accès à l'eau potable et bassin hydrographique du Congo.

1. Introduction

La garantie de la disponibilité de l'eau pour tous comme bien primordial exige des gestes individuels et communautaires de respect et de charité, des politiques et des choix concrets qui contribuent à promouvoir et à mettre en pratique le droit à la vie. Prendre soin des sources, des bassins hydriques, des mers et des océans est un impératif urgent.

Si lors de sa signature, la Déclaration universelle des droits de l'homme (DUDH) du 10 décembre 1948 n'avait pas mentionné le droit à l'eau parmi les droits fondamentaux, entre autres parce que l'accès à l'eau était une évidence pour les négociateurs du texte : des diplomates issus de familles aisées et de pays développés où le manque d'eau n'était pas frappant, le 28 juillet 2010, l'Assemblée générale des Nations Unies a adopté la résolution faisant de l'accès à l'eau potable et à l'assainissement l'un des droits humains fondamentaux. La question est devenue préoccupante au point que l'accès à l'eau potable et à l'assainissement est mentionné comme le 6^{e} objectif des Objectifs de Développement Durable (ODD).

Le fait que l'Encyclique *Laudato si'* se penche aussi sur cette question montre certainement qu'un effort devrait être fourni pour aller au-delà des déclarations et des principes pour que cette volonté universelle réduise ou supprime les barrières naturelles ou humaines empêchant les plus faibles ou les plus pauvres à jouir de ce droit. Or les ressources en eau sont différem-

ment réparties sur la planète. On trouve des océans, des fleuves, des rivières, mais aussi des espaces où l'eau est plus rare, les déserts par exemple.

Le thème qui nous a été confié est celui de l'eau dans le bassin du fleuve Congo. Certainement parce qu'en parlant du développement humain intégral dans cette contrée, une allusion a été faite à l'eau douce dont l'accès est difficile surtout pour les pauvres dans cette région suffisamment dotée par la nature.

Dans cet article, nous dirons un mot sur la répartition des eaux douces à travers le monde, et sur l'hydrographie du bassin du Congo. Ensuite nous aborderons les différents usages de l'eau dans cette partie de monde, les défis rencontrés, les solutions en cours puis nous proposerons quelques actions à mener et nous terminerons par une brève conclusion.

2. La répartition de l'eau douve dans le monde

Plusieurs recherches ont essayé de quantifier la répartition de l'eau sur la planète Terre. Cette eau n'est pas répartie de la même manière sur la planète. Le tableau ci-dessous, présenté dans de nombreux sites Internet, permet de nous faire une idée de cette répartition.

Source	Volume (en km3)	% d'eau douce	% d'eau
Océans, mers et baies	1,338,000,000	--	96,54
Calottes glaciaires, glaciers et neiges permanentes	24,064,000	68.6	1.74
Eau souterraine	23 400 000	--	1.69
Eau douce	10 530 000	30,1	0,76
Saline	12,870,000	--	0.93
Humidité du sol	16,500	0.05	0.001
Glace et permafrost	300 000	0.86	0,022
Lacs	176 400	--	0.013
Eau douce	91,000	0.26	0.007
Eau salée	85,400	--	0.007
Atmosphère	12,900	0.04	0.001
Marécages	11 470	0,03	0,0008
Rivières	2,120	0.006	0.0002
Organismes vivants	1 120	0,003	0,0001

Tableau réalisé d'après les données fournies par Igor Shiklomanov dans son chapitre «World fresh water resources» dans l'ouvrage de Peter H. Gleick (curateur), *Water in Crisis. A Guide to the World's Fresh Water Resources*, Oxford University Press, New York août 1993.

Proposant une représentation graphique de la répartition de l'eau douce dans le monde lors de la Journée Mondiale de l'Eau (2021), Raphaël Tshimanga, Directeur du Centre de Recherche en Ressources en Eau du bassin du Congo (CRREBaC), indique les pourcentages suivants : l'eau saline des océans constitue 97% du total des eaux de la Terre. Le 3% restant est à son tour répartit essentiellement entre l'eau souterraine (31,4%) et les calottes glaciaires et les glaciers (68,3%) alors qu'une infime partie constitue l'eau de surface douce et liquide (0,3%). Cette dernière se compose des lacs (87%), des marais (11%) et des rivières (2%). Le Directeur Tshimanga insiste sur le fait que « l'eau douce est une ressource vitale, vulnérable et épuisable qui doit être protégée ».

3. L'hydrographie du bassin du Congo

Le bassin du Congo ou le bassin versant du fleuve Congo, situé dans la partie centrale de l'Afrique, est délimité différemment selon que l'on s'intéresse à la forêt ou au réseau hydrographique.

Parlant de la couverture forestière, on cite six pays : le Cameroun, le Gabon, la Guinée Equatoriale, la République Centrafricaine, la République du Congo et la République Démocratique du Congo qui couvre près de 60 % de ce massif forestier contenant des tourbières qu'elle partage avec la République du Congo.

Quant au réseau hydrographique, le bassin du Congo est constitué des cours d'eau qui alimentent le fleuve Congo à partir de sa source, dans la province du Lualaba en République Démocratique du Congo, jusqu'à son embouchure dans l'océan Atlantique. Il s'organise autour du fleuve Congo, long d'environ 4.700 km avec un débit moyen annuel de 41.000 m3/s, ses affluents dont les principaux sont l'Oubangui (1.060 km avec un débit de 11.000 m3/s à Bangui), la Sangha (790 km ; 1.714 m3/s à Ouesso) et le Kasaï (2.153 km ; 9.873 m3/s) et le lac Tanganyika considéré comme le deuxième plus profond et plus important lac en volume d'eau douce du monde. Le bassin hydrographique du Congo s'étend sur la République du Congo, le Cameroun, la République Centrafricaine, la République Démocratique du Congo, l'Angola, le Rwanda, le Burundi, la Tanzanie et la Zambie.

4. Les différents usages de l'eau dans le bassin du Congo

L'eau, dont la Bible dit qu'au commencement l'esprit de Dieu planait sur les eaux, comporte plusieurs usages dont les plus importants sont les be-

soins spirituels, sociaux, économiques et environnementaux. Sous ce point, nous allons nous focaliser plus sur les usages sociaux et économiques dont les impacts sont ressentis sur l'environnement et sur l'évaluation spirituelle du comportement humain en rapport avec l'usage des ressources en eau. Les quelques usages sélectionnés sont les suivants : usage domestique, agriculture, élevage, pêche, énergie, industries, voies navigables.

4.1 *Usage domestique*

Parmi les usages domestiques courants, il y a la consommation de l'eau comme boisson, l'utilisation pour la cuisson des aliments, pour la lessive, pour la vaisselle, pour les toilettes, etc. Si dans les grandes agglomérations la distribution d'eau est généralement à charge d'une entreprise de l'Etat, dans les milieux ruraux, la population utilise l'eau des sources, des rivières, mais parfois aussi des lacs et l'eau des pluies. Cependant, face aux capacités insignifiantes des entreprises de l'Etat, il y a des ménages qui recourent aux puits de fortune. Dans les villes, les forages sont devenus de plus en plus courants.

Selon une estimation du PNUE réalisée en 2010 sur six provinces, porter l'accès direct à l'eau de 27% aujourd'hui à 60% d'ici 2020 en RDC nécessiterait, notamment, l'aménagement de 11.875 sources, requérant 716 systèmes de canalisations, 13.056 pompes manuelles et mécaniques et 707 forages avec pompes électriques. Cette estimation souligne le rôle crucial des sources et des eaux souterraines. (Source : PNUE, 2010).

4.2 *Agriculture*

Dans la région du bassin du Congo, l'agriculture dépend généralement des cultures saisonnières, par exemple, le maïs, le manioc, le riz, le sorgho, etc. Cet avantage vient du fait que les pays sont situés à cheval sur l'Equateur et bénéficient de pluies abondantes. Il y a généralement une saison de pluies plus longue que la saison sèche. Ceci fait que ces pays recourent moins à l'irrigation, tout en ayant d'abondantes ressources en eau. Mais dans les villes, spécialement dans les quartiers péri-urbains, l'eau est abondamment utilisée pour l'arrosage des légumes par les maraîchères.

> Selon la FAO (Organisation des Nations Unies pour l'alimentation et l'agriculture), l'Afrique centrale destine 56% de ses prélèvements d'eau à l'agriculture (irrigation et eau pour bétail : la moitié serait utilisée par le Cameroun). Les autres

pays pratiquent plus les cultures saisonnières. Les précipitations annuelles sont supérieures à 1.000 mm/an en moyenne.

4.3 *Elevage*

Dans le bassin du Congo il y a des populations qui pratiquent l'élevage du gros bétail, du petit bétail et des ovins. Le bétail s'abreuve généralement dans des cours d'eau, de l'eau des puits et des réservoirs aménagés à l'occasion. Il arrive que les mêmes cours d'eau fréquentés par le bétail servent aux usages domestiques. Ce qui occasionne parfois certaines maladies.

A cause de la sécheresse due à l'extension du désert du Sahara, des migrations des éleveurs appelés Mbororo vers des pâturages situés dans le Nord-Est de la RDC ont été signalées. Comme ceci s'est fait sans regard des normes des migrations, des conflits sont perceptibles entre ces éleveurs et les populations autochtones.

4.4 *Pêche*

Les populations riveraines vivent de la pêche qu'elles font dans les rivières, les lacs, les marécages, les étangs et le fleuve. D'autres font la pisciculture. Certains usages comme l'exploitation minière ont cependant un impact négatif sur les cours d'eau : la pollution par des déchets toxiques. Cette situation met en mal l'activité économique des pêcheurs. A côté de cela, il y a des pratiques non recommandables auxquelles quelques pêcheurs recourent : l'utilisation des produits toxiques, des filets à petites mailles interdites, parfois même des moustiquaires. Par ailleurs, dans les milieux urbains, les cours d'eau sont envahis de déchets plastiques qui partent des canalisations jusque dans des rivières, dans le fleuve et se retrouvent même à l'océan Atlantique.

4.5 *Energie*

Le réseau hydrographique du bassin du Congo dispose d'un riche potentiel en sites où des infrastructures pour la production de l'énergie électrique pourraient être construites. Cependant tous ces sites ne sont pas encore exploités, ce qui fait que le taux d'accès à l'énergie électrique est encore faible. Par conséquent, plusieurs ménages recourent au bois de chauffe, à la fabrication de braise pour la cuisson des aliments. Ceci constitue malheureusement une forte pression sur les forêts. A l'inverse, l'utilisation du carburant pour les groupes électrogènes reste très répandue à côté des panneaux solaires.

Intervenants lors de la 8e Assemblée Générale du RIOB (Réseau international des organisations de bassin) à Dakar en 2010, les délégués de la CICOS (Commission internationale du bassin du Congo Oubangui-Sangha) avaient donné quelques indications sur les potentialités et les infrastructures hydrauliques dans le bassin du Congo. Benjamin NDALA et Blaise-Léandre TONDO ont informé qu'il y avait en ce moment 41 centrales en exploitation, pour 2.748 MW de puissance installée, tandis que le potentiel total estimé était de 127 sites pour 48.575 MW. Ils ont appuyé leur communication par une carte illustrative de l'emplacement des différentes infrastructures et des sites potentiels. Le plus grand site reste celui d'Inga sur le fleuve Congo où sont installés deux barrages, Inga I et Inga II. Certains analystes disent que l'équipement complet du seul site d'Inga, situé sur le cours inférieur du Congo à proximité de Matadi (d'une puissance estimée supérieure à 40.000 mégawatts, soit une production potentielle de 250 milliards de kilowatts/heure), pourrait couvrir les besoins actuels de l'Afrique subsaharienne. Mais seuls 650-750 MW sont produits en raison du non fonctionnement des deux tiers des turbines.

4.6 *Industries*

En parlant des industries, nous nous focaliserons plus sur les industries extractives, spécialement les industries minières et pétrolières. Il existe dans le bassin du Congo un certain nombre d'industries extractives. Ces industries utilisent de l'eau dans leurs procédés extractifs. L'eau utilisée dans le processus de traitement des minerais par exemple est tirée soit des eaux de surfaces ou des eaux souterraines. Selon que les quantités sont importantes, cela peut avoir un impact sur les réserves du milieu. Cependant, ce qui est plus dangereux c'est la gestion des eaux usées qui contiennent des substances toxiques (le degré d'acidité d'un bassin de rejets d'effluents est tel qu'il abime la peau humaine après un bref contact). Plusieurs cas ont déjà été dénoncés de pollution par les hydrocarbures, les acides, les métaux lourds, etc. Les dégâts sont souvent énormes et la réparation pose problème. Bien que les responsabilités soient établies par des législations, au niveau pratique les victimes de pollution sont souvent abandonnées à leur triste sort : tantôt elles n'ont pas de moyens pour aller en justice, tantôt, même en allant en justice elles manquent de moyens pour constituer des preuves à partir des analyses des laboratoires qui coûtent cher. Il arrive que des populations délocalisées soient dotées de nouvelles maisons dans un nouveau village sans aucun point d'accès à l'eau (ce fut attesté par une visite du CERN en 2013). Il arrive aussi que les autorités

soient complices des entreprises ou que la Justice soit corrompue. Les dégâts peuvent être visibles ou invisibles et toucher même des nappes phréatiques.

4.7 *Voies navigables*

Les rivières, les lacs, le fleuve, constituent des voies de navigation. Selon la CICOS, les principaux axes de navigation se situent sur le fleuve Congo, sur la rivière Oubangui et sur la rivière Sangha. Ces biefs permettent de connecter trois pays, la République Centrafricaine, la République du Congo et la République Démocratique du Congo. Cependant, il faudrait aussi considérer la navigation interne dans les pays, mais aussi à travers les lacs frontaliers comme le lac Tanganyika et le lac Kivu. Il existe de grandes liaisons par fleuve, rivières et lacs. Il faut toutefois dire que ce potentiel de voies navigables n'est pas exploité à plein rendement. Par ailleurs, il convient de signaler que le débat de la navigation, tout comme celui de l'extension du barrage d'Inga constituent quelques-uns des arguments contre le transfert de l'eau de la rivière Oubangui vers le lac Tchad.

5. Les défis relatifs à la gestion des ressources en eau

Sur base d'une cartographie réalisée par le Réseau ecclésial du bassin du Congo (REBAC) sur les défis pastoraux et socio-environnementaux dans la région du bassin du Congo (4 pays ont été couverts : Cameroun, République Centrafricaine, République du Congo, République Démocratique du Congo), quelques défis relatifs à la gestion des ressources en eau ont été identifiés :

- L'accès insuffisant à l'eau potable pour tous.
- La pollution des rivières, lacs et cours d'eau.
- Les inondations.
- L'assèchement des rivières.
- Les érosions dues aux constructions anarchiques et aux problèmes d'urbanisation, mais aussi l'érosion côtière.
- La gestion de la question de transfert des eaux dans d'autres bassins, spécialement le projet Transaqua consistant à transférer l'eau du bassin du Congo vers le lac Tchad frappé d'assèchement.

La pollution des rivières et des canalisations par des déchets ménagers, spécialement les plastiques, et les déchets des entreprises, notamment les entreprises minières, est devenue de plus en plus préoccupante. En RDC, elle empêche même l'entreprise publique de distribution d'eau (REGIDESO) de faire

fonctionner ses machines. Le communiqué de presse DPK/009/2021 de la REGIDESO daté du 16 mars 2021, par exemple, informait les administrations et les habitants de certaines zones de la province Kinshasa que « les usines de traitements d'eau de N'Djili, Lukunga et Lukaya sont à l'arrêt suite à la turbidité très élevée de l'eau brute » et que, à cause de cela, « la fourniture d'eau potable est interrompue » dans une cinquantaine de quartiers ou communes.

Les défis en rapport avec les ressources en eau ont été évoqués autrement par le PNUE (Programme des Nations Unies pour l'Environnement). Dans son étude *Problématique de l'Eau en République Démocratique du Congo - Défis et Opportunités. Rapport Technique* publiée en 2011, le programme classe les défis par rapport au milieu urbain et périurbain d'une part et le milieu rural d'autre part. Comme on peut le lire dans le tableau ci-dessous, les défis sont techniques, politiques, sociaux et environnementaux. La question économique s'y invite à travers le prix élevé de l'eau et les faibles retours sur investissement et viabilité des services publics en charge de l'eau.

Eau potable : défis majeurs par sous-secteur	
Urbain et périurbain	Infrastructures abandonnées. Un tiers des usines de traitement non opérationnelles. Taux de croissance rapide de la population urbaine (4.6%). Prix élevé de l'eau. Faibles retour sur investissement et viabilité financière des services publics en charge de l'eau. Informalité des prestations de services d'eau dans les zones périurbaines. Dégradation des bassins versants augmentant les coûts de traitement.
Rural	Faible accès aux sources d'eau améliorées. 60% des systèmes ruraux de services d'eau non opérationnels. Informalité des prestations de services d'eau (contrôle de qualité et entretien insuffisants). Taux élevé de contamination bactériologique. Faible allocation du total des investissements pour le sous-secteur (15% du total). Dégradation physique des sources d'eau potable.

Tableau réalisé d'après : Problématique de l'eau en République Démocratique du Congo – Défis et Opportunités. Rapport Technique. Page 5 (PNUE, 2011).

Quant à la question du transfert de l'eau de la rivière Oubangui ou du fleuve Congo vers le Lac Tchad, plusieurs arguments contradictoires sont avancés d'une part par le Comité du bassin du Lac Tchad, qui évoque une

étude de faisabilité qui encouragerait la démarche, de l'autre, la CICOS qui estime que les arguments avancés ne sont pas convaincants. Lors de la 8e Assemblée générale du RIOB, la question a été évoquée par la délégation du CICOS. Cette délégation a informé qu'en 2006, la CICOS a reçu mandat de la CEEAC (Communauté Economique des Etats d'Afrique Centrale) de défendre les intérêts des pays donneurs de la ressource. Et qu'en octobre 2009, une Etude de faisabilité avait été lancée par la CBLT (Commission du bassin du Lac Tchad). Les conclusions de cette étude ont été jugées insuffisantes en ce qui concerne la prise en compte des préoccupations de la CICOS. Il faudrait donc élaborer des termes de référence supplémentaires pour une Etude d'impact sur le bassin du Congo par rapport à ce projet de transfert.

Par ailleurs, dans son ouvrage « La Guerre de l'eau. Water war », Kabasele Albert fait remarquer qu'il n'y a lieu de prélever de l'eau ni par la rivière Oubangui à cause de la diminution de ses eaux affectant entre autres la navigabilité, ni à partir de l'embouchure du fleuve Congo au risque d'accélérer l'érosion côtière.

Cette question soulève donc un dilemme au nom de la destination universelle des biens : faut-il céder de l'eau au Lac Tchad en assèchement ou garder cette eau en vue de protéger la forêt et les tourbières du deuxième poumon de la planète ?

6. Quelques solutions obtenues ou en cours d'expérimentation

Face aux différents défis de gestion des ressources en eau du bassin du Congo, quelques solutions sont envisagées ou sont mises en œuvre par certaines structures. Parmi ces solutions, il y a lieu de citer le projet MESA (Monitoring for Environment and Security in Africa), la Base de données hydrauliques de la CICOS, le CB-CIS (Congo Basin Catchment Information System ou Système d'informations sur les ressources en eau du bassin du Congo).

Le projet MESA vise à renforcer les capacités de gestion de l'information, de prise de décision et de planification des institutions africaines chargées de l'environnement, du climat, de la sécurité civile et des questions connexes. Ce projet met particulièrement l'accent sur les applications climatiques et environnementales, en assurant la maintenance et la mise à niveau des stations de réception EUMETCast (données satellitaires).

La Base de données hydrauliques de la CICOS est une base de données spatiales (comprenant des données générales, administratives, hydrologiques, techniques, etc.) des infrastructures hydrauliques du bassin du Congo.

La CB-CIS, outil de Gestion Intégrée des Ressources en Eau, est un outil scientifique et d'aide à la prise de décision. La CB-CIS est une interface de connaissance qui fournit des informations de haute portée scientifique et en temps quasi réel sur la structure, les processus et les fonctions des ressources en eau à l'échelle des sous bassins versants, mieux « unité de gestion des ressources en eau », ainsi que sur les impacts des changements dans l'environnement physique et la société. Cet outil est développé par le Centre de Recherche en Ressources en Eau du bassin du Congo (CRREBaC) basé à l'Université de Kinshasa.

7. Les actions à mener

Au regard du paradoxe entre l'abondance en eaux douces dans le bassin du Congo, le faible accès de la population à l'eau potable et aux défis relatifs aux multiples usages qui menacent ces ressources, un certain nombre d'actions devraient être envisagées pour une meilleure gestion de ce patrimoine. Il s'agit notamment de la GIRE (Gestion Intégrée des Ressources en Eau), de la sensibilisation, de l'investissement et d'une meilleure étude da la question de transfert de l'eau d'un bassin à l'autre.

La GIRE, telle qu'elle a été définie dans le document *Partenariat Mondial de l'Eau 2000* est « un processus qui encourage la mise en valeur et la gestion coordonnée de l'eau, des terres et des ressources associées en vue de maximiser le bien-être économique et social qui en résulte d'une manière équitable, sans compromettre la durabilité d'écosystèmes vitaux ». La sensibilisation à un usage rationnel de l'eau permettrait aux différents usagers d'éviter le gaspillage et la pollution. L'Eglise aurait un grand rôle à jouer à ce niveau. Quant à l'investissement pour un accès à l'eau potable même pour les moins nantis, cette charge revient en premier aux Etats qui devraient élaborer des politiques cohérentes et devraient investir dans ce domaine, au regard de leurs pouvoirs régaliens et de leurs engagements internationaux.

La question du transfèrement de l'eau d'un bassin à l'autre, telle que soulevée dans le projet Transaqua, devrait être bien étudiée pour éviter de perturber les écosystèmes, tout en tenant compte d'une nécessaire solidarité en eau, concurrente aux besoins en électricité, en oxygène ou en voies de navigation.

8. Conclusion

Le bassin du fleuve Congo est une zone dotée de ressources en eaux douces en quantité suffisante. Cependant, l'accès à l'eau potable contraste avec cette abondance. Par ailleurs, ces ressources sont menacées par plusieurs usages inconséquents des humains. Les eaux du bassin du Congo sont ainsi menacées par la pollution causée par des entreprises extractives, mais aussi par les ménages et les habitants, des villes comme des campagnes. De la qualité de l'eau dépendent la survie de la faune aquatique, même non aquatique et des humains.

Les eaux du bassin du Congo, qui entretiennent la forêt considérée comme le deuxième poumon de la planète couvrant de grandes tourbières, constituent aussi un potentiel important en hydroélectricité et en voies navigables. Le fait que ces eaux se situent au centre de deux zones africaines où le désert prend de plus en plus de place, suscite des convoitises à la base des initiatives de transfèrement des eaux vers d'autres bassins comme celui du Lac Tchad qui souffre d'assèchement. Ce dilemme de solidarité eau-oxygène-électricité appelle à des études et des réflexions approfondies devant garantir l'équilibre des écosystèmes.

Entre-temps, pour répondre aux besoins d'accès à l'eau potable pour tous, des appels pressants devraient être lancés aux Gouvernements de ce bassin pour qu'ils élaborent des politiques cohérentes de gestion de ces ressources et qu'ils investissent dans les services permettant même aux plus pauvres, marginalisés par la course au commerce de l'eau, afin de réduire la tendance à privilégier la valeur économique de l'eau plutôt que celle sociale et environnementale. Quant à l'Eglise, elle est appelée à intensifier la formation et la sensibilisation afin de faire comprendre conscience sur ces enjeux, de contribuer à la réduction des dégâts causés sur les ressources en eau par nous-mêmes à travers des comportements irresponsables. Bien gérée, l'eau améliore la vie ; mal gérée, elle engendre des conflits et supprime la vie non seulement pour les humains, mais aussi pour les autres créatures.

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"CARING FOR THE OCEANS" – OPENING PRAYER

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Date of submission: 25 March 2021

In the Name of the Father, Son and Holy Spirit. Amen.

We pray today for all those who work at sea.

For all port chaplains in the world, that they will carry out the Mission of the Church and be instruments of Christ.

For all those who give service to lifeboats and their work.

We pray for all those who sail under Flags of Convenience.

We pray for all those working to bring us food – especially fishermen and fish farmers, and on cargo ships, oil tankers especially the Evergiven which is stuck in the Suez Canal – we pray that they will be rescued safely.

We remember all those working at sea and all the difficulties and dangers they face.

We give thanks for their knowledge of the sea and for their courage in putting out into the deep; for their patience and their skills.

We pray for all those who cause pollution and environmental or ecological damage through negligence, carelessness or accidents remembering that as we benefit from their harvest so we share their responsibility for its side effects.

We pray too for those anxious over fishing and those trying to protect whales and dolphins.

We give thanks for the beauty of our waterways and coastlines; and we pray for those without clean water or with no water supply at all.

We pray for the women whose back-breaking task it is to fetch water, and

We pray for those facing drought especially those in third world countries today.

We pray for those whose workplace or fields have been destroyed by floods.

We pray especially for those who are sick or dying because of dirty water.

We give thanks for those who work in the water industry, who deal with sewage and supply us with clean water; and for all those who register the cleanliness of our beaches.

We pray and remember all those who have died at sea.

And, finally Lord, we thank you for the opportunity to meet today.

May we engage with each other with faith and perseverance.

May we manage each situation with wisdom and value.

May we speak and serve with integrity and purpose.

Lord, we thank you as you work within us today. Amen.

Our Lady, Star of the Sea Pray for us.

In the name of the Father, the Son and the Holy Spirit. Amen.

VALUING OUR MOANA IN OCEANIA

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Caritas Oceania is a network of seven Caritas members responding to and advocating for the needs of the poor in one of the largest regions of the globe. Its members are part of the Caritas Internationalis network of 165 Catholic development and social justice agencies, working around the world.

Since 2014, Caritas in Oceania has shared stories of environmental change and response in the region through the *Caritas State of the Environment for Oceania* reports. Drawing from that work, this contribution touches on climate change, fisheries, coastal extraction, and offshore seabed mining.

The Pacific Ocean covers one third of the world's surface, and contains half of its water. It is our responsibility – the governments and peoples of Oceania – to protect this precious environment on behalf of all humanity – for present and future generations. The continued health of this and all oceans is crucial for the welfare of our people and all people around the world.

Our land areas include the continent of Australia, large mountainous islands such as Aotearoa New Zealand and Papua New Guinea, smaller volcanic islands such as Samoa and Fiji, tiny coral atolls, and larger coral-rock islands such as my homeland of Tonga.

We are connected and united by the sea. Our ocean is our life, and water is vital to our life and livelihoods. But it's also getting confused, as is evidenced by salt water intruding on our freshwater sources for drinking and growing plants and weather becoming more extreme: longer, more intense droughts; more intense and powerful cyclones; and heavier and longer rainfall.

In Tonga, El Niño drought crises have seen people digging deep and restoring old water systems. The middle Ha'apai group of islands is in a relatively dry zone. It has long periods of drought. Caritas Tonga has prioritised Ha'apai for rehabilitation of disused 1920s village water catchment sheds to

provide safe drinkable water. In recent years, Caritas Tonga has worked with communities to fix 14 such sheds, doubling the number in Ha'apai. Caritas Tonga is now urging the Tongan Government to support the refurbishment of further existing catchment sheds as well as the construction of new tanks to back up existing potable water supplies.

To deal with water shortages and emergency situations, Caritas Tonga has also distributed plastic rainwater-collection tanks to provide communal water refill stations for 21 communities in Tongatapu and 14 in Ha'apai. These refill stations are situated at schools, Church halls and community halls. Community members can fill their own water containers, while Caritas volunteer committees look after security and management of these stations. Water is tested on a regular basis. If it's not safe to drink, Caritas works with the Ministry of Health to treat the water.

Projections for Tonga's future rainfall trends suggest that dry seasons will become drier and wet seasons wetter, with an increase in extreme rainfall days.

Particularly in low-lying coastal areas, Tonga also faces intrusion of salt water from higher sea levels and more storm surges. This contaminates the groundwater and affects the quality and quantity of drinkable fresh water, as well as the productivity of the limited agricultural land in the region.

Farmers from Hihifo in southern Tongatapu say that increased sea spray on their crops is also affecting their yields. They have smaller sized yams and taro and the soil needs longer rejuvenation periods between harvests. Sea level rise further compounds their ability to work within already restricted land. Thin-based water lens to help with watering their crops now have higher water salinity.

For farmers, these interrelated challenges become a direct threat to their ability to provide food for their families and for economic development.

On the matter of seafood resources in Oceania, coastal fishing provides 50-90 per cent of animal protein for coastal communities in many Pacific island countries. Nearly half of our coastal households earn their first or second income from catching or selling fish. About 70 per cent of our fishing is subsistence. In many areas, yields are declining from coastal fishing, due to overfishing, climate change, and environmental deterioration of coastal waters. Both coastal and land-based activities are affecting marine life and food resources. In Papua New Guinea and Fiji in particular, mining and logging activities have caused sediment to wash out to sea, smothering coral reefs and seafood resources.

In response to such degradation, marine protection areas are becoming more prevalent and promoted across the Pacific to protect fish and fragile ecosystems. Caritas has encountered a successful example of this in the village of Felemea in Tonga's Ha'apai group of islands.

In response to declining numbers of fish, and smaller-sized fish, the village set up a special marine protection area (MPA) in 2008. It is 1.633 hectares in size and includes two 'no-fishing areas'. Though small, the MPA has made a significant difference to the life of the community. Elders say species they remember from the 1970s have returned; and the fish are starting to grow in numbers and size again. The community also has another source of income from the fisheries.

Today, there are 17 MPAs throughout Tonga. MPA communities manage their fisheries with help from central government. Fishing is restricted to registered people, or those who hold a permit from the local management committee. The areas include specific 'no-fishing areas', projects to restore fish stocks and habitats, community awareness-raising, and other activities to improve living standards.

Fisheries have been impacted elsewhere in Oceania through a number of activities. For example, in Samoa, coastal sand mining, driven by demand for construction activities, often happens without government consent or the agreement of all affected communities. Residents of the coastal community of Solosolo told us about the impact of 30 years of mining black sand from the coast. The beach has been lost, along with some homes. A 54 year old fisherman, Sautape Iosua, remembers going spearfishing with his father almost every morning and selling the day's catch. They would eat what was left over and lived comfortably with what they had. But once sandmining started, fish numbers declined. "When the fish were gone I knew nothing else to do or where to go; so now I just work in the plantation for eating and sometimes get small fish," said Sautape. However, in August 2019, the village council decided to put a stop to all sand mining in the area, and hope that this may lead to healing and restoration of the natural sand supply.

In Fiji, Caritas and the Catholic Church have also raised concerns about coastal sand mining; in particular, around the Ba river mouth, where a huge offshore black sandmining operation is destroying food sources and livelihoods for local residents. Waste from the mining, put back in the sea, is changing the clear blue ocean to brown black, and damaging the nearby reef. In addition, there was no proper consultation for the issuing of the mining licence,

with many locals who agreed to it not fully understanding the Environment Impact Assessment around it.

Further offshore, deep sea mining poses the 'next big threat' for our moana. For more than a decade, coastal communities in Papua New Guinea (PNG) fought off plans by a joint venture between the PNG government and Nautilus Minerals to mine copper and gold at a depth of 1.600 metres below the sea, 30 km offshore. Locals were concerned at the potential impact on fisheries, traditional activities and tourism. This venture has collapsed financially. But it has left the PNG government heavily in debt; and a holding company is still seeking to extend the duration of existing exploration licences in the area, keeping the pressure on communities to defend their customary lands and fishery areas. The Catholic Church and Caritas have supported those communities in awareness raising and legal cases. In April 2017, Cardinal Sir John Ribat of Port Moresby called on all Pacific governments to ban seabed mining.

Many companies are now actively promoting mining of seafloor minerals as necessary for batteries and renewable energy in the so-called "green transition", using the climate crisis as a smokescreen to push mining of the seafloor. However, we do not know enough about the long-term environmental impacts of seabed mining on our marine resources.

Concern is growing across the Pacific. Caritas Oceania has joined other Pacific civil society organisations in a 'Pacific Blue Line against seabed mining', calling for a global ban on exploration and mining for seafloor minerals, because of the damage it will do to ocean ecosystems and marine life. Our oceans are under enough stress from multiple sources such as global warming, pollution, overfishing and oil exploration.

Our oceans are our health – not just for Oceania, but for people everywhere. They dramatically affect our weather, they provide sources of food and medicine, and for Oceanic peoples, it is the source of our identity. We from Caritas Oceania call on governments and people of the world to support us in the following ways:

- Face up to climate change: cut global carbon emissions as quickly as possible, and support strong adaptation to deal with coastal flooding, erosion, and extreme weather.
- Providing strong environmental controls on land-based activities affecting coastal areas.

- Tackle effectively, at international and national levels, overfishing and illegal fishing; and promote greater use of Marine Protection Areas.
- Hear the call from the Pacific to ban seabed mining and exploration, in both international and national waters.

We are resilient people, determined to fight for our future in the wake of multiple stressors facing our community, and against naysayers who are writing our islands off. In the words of the Pacific Climate Warriors: "We are fighting, not drowning."

THE ABSOLUTE VALUE AND NEED OF CARING FOR THE OCEAN

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1. The Absolute Value and Need of Caring for the Ocean

It is essential realising that all oceanic waters are interconnected and, therefore, we have only one ocean, the most important component of our planet. As a matter of fact, the ocean covers about 71% of the planet surface, even if the planet, under a strict anthropocentric vision, is called Earth.

The ocean is more than essential for the life on our planet. The flows of its waters, the large and small ocean currents, affect both the climate and the lives of the beings that live in its waters and along its coasts. The Gulf Stream, for example, helps the migration of Atlantic pelagic species, but also affects the climate of neighbouring regions. It is currently slowing down and this could have serious effects.

El Niño and La Niña, two oceanographic phenomena in the Pacific, have a major impact on marine trophic chains and the climatology of an important part of the globe. When El Niño is active, for example, there are exceptional catches of small pelagic fish such as anchovies and sardines, which are an asset to communities in the South-East Pacific.

The atmosphere and the ocean are closely interlinked, the ocean substantially influences the climate, but global warming in turn influences the ocean, exacerbating natural weather phenomena (such as storms, catastrophic rainfall, cyclones), which also have massive effects on land.

While the melting of Arctic and Antarctic ice, linked to global warming, is welcomed by some because it has allowed the reopening of the famous 'Northwest Passage', which significantly shortens communication in the northern part of the Atlantic and Pacific Oceans, it creates a number of

serious ecological problems for species living in those areas, and also alters the salinity and density of ocean waters, with serious effects on the main oceanic currents and knock-on impacts.

Rising ocean levels, caused by climate change, mean not only a reduction in land area, with problems for small island communities, but also a progressive increase in groundwater salinity.

The ocean, by triggering the main meteorological processes, is also the basis of the planet's fresh water resources and this is rarely considered.

The ocean is the biodiversity kingdom, because most of the species is living there, but it is largely unknown: about 92% of the seafloor is still unexplored in terms of the biological communities living there. Even if the seafloor is mapped at a low resolution, just few areas that were mapped at a higher resolution for various interests.

The total number of marine species discovered so far is about 274.000 but considering the small percentage of marine communities we know, it is suspected that they should be around 1.6 million species and everybody hopes that it would be possible to describe these species before they disappear. It is a treasure trove of biodiversity, which we absolutely must protect, managing it in such a way as to avoid any overharvesting or unintended negative impact.

The ocean is also a very important source of food resources for humans. Fishing has always been one of the activities that have provided essential proteins for our diet. Instead of worrying about using fishery resources in a sustainable and durable way, the governments prefer to devote the crumbs of funding to such research. We are only able to assess very few stocks.

In the Mediterranean, for example, we only have partial data on 37 species, out of a total of over 180 that we use. For these 37 species, we have data to attempt to assess 135 stocks, 38.5% of which are already overfished. In addition, we do not have the data needed to move from a species assessment approach to the necessary ecosystem approach, and this situation implies errors in species management and possible problems for the marine ecosystem.

Humans do not seem to realise their very close dependence on the health of the ocean: since the late 1.800s, we have been dumping plastics into the ocean and we continue to dump them with an annual estimate of around 8 million tonnes. There is a real oceanic plastic state, the Garbage Patch State, officially recognised by UNESCO, which is second in size only to Russia (but based on 2013 data!). The goal of the Garbage Patch State is to disappear, but this is unrealistic, because removing the plastics that are already in the sea is

virtually impossible. Instead, we need to do everything we can to stop plastics getting into the ocean by changing our lifestyles and production systems.

Since the beginning of the 20th century, we have polluted the ocean first with DDT and then with PCBs, persistent and very dangerous substances for which Nature has not yet found a way to break down the molecules and degrade them. From what we currently know, these substances, which are extremely dangerous to all ocean inhabitants and to us humans, will remain in the food chains forever, affecting all vegetal and animal species, including the humanity.

Furthermore, since the very early days of the nuclear age, we have contaminated our waters with radioactive isotopes and are continuing to do so, despite the fact that the half-life of radioactive charges is extremely long for some isotopes.

If we would like to improve our situation, we need to change the paradigms. The ocean is not something we can freely exploit as we like. *The Limits to Growth* (Meadows *et al.*, 1972) showed us the main roadmap for a sustainable development and the many limits we have. The document *Aqua fons vitae* (Dicastery for Promoting Integral Human Development, 2020), provided important remarks and a list of challenges for a more sustainable approach to the aquatic world. The *UN Second World Ocean Assessment* (Anonymous, 2021) is providing an updated overview of the different situations in the various parts of the ocean. The IPPC Sixth Assessment Report (IPCC, 2021) is showing us the dramatic evidences of the climate change.

We should realise that our lives depend primarily on the health of the ocean, as does the entire life of the Planet.

We need to act accordingly and change our approach to the environment and the ocean. Governments must act now, but individual citizens can also do a lot by behaving responsibly and asking their Governments and Institutions to put in place all necessary changes for improving the current situation. The UN has set a number of important targets to be reached by 2030, but we have little time to act and we must do so.

We must protect the nature also for protecting ourselves, because we are nature as well.

We have to be aware that the ocean can live very well without man, but man absolutely cannot live without a healthy ocean.

As the great oceanographer Silvia Earle says: "No water, no life, no blue, no green."

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L'ECONOMIA ALLE PRESE CON I BENI COMUNI: IL CASO DELL'ACQUA

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Parole-chiave: bene comune, bene collettivo, libertà individuale, scarsità, rivalità, eticità individuale, contratto sociale e uguaglianza.

Ours is not mine[1] (proverbio africano)

1. La tragedia dei *commons*: quando i beni comuni diventano scarsi e le persone sono libere

«Si può andare a funghi solo in giorni prestabiliti. Anche in giornate fortunate, non si può essere ingordi: i residenti non possono raccogliere più di 5 kg di funghi, i non residenti non più di 3. (...) I funghi vanno raccolti nella loro interezza, nella raccolta si consiglia di estrarre i funghi con una leggera rotazione, di ricoprire la piccola cavità prodottasi nel terreno e pulire il fungo sul posto con l'aiuto di un coltello: si eviterà così di impoverire gli strati nutrienti della terra a vantaggio del bosco intero».

Così leggiamo in uno dei tanti regolamenti comunali sulla raccolta di funghi.

Da diversi anni, per eredità famigliare, dedico parte del mio tempo libero alla raccolta di funghi porcini nei boschi dell'Appennino ascolano (Sibillini) e Monti della Laga (Abruzzo), e dal prossimo anno anche nelle colline del Valdarno (una zona, per inciso, molto ricca di ottimi porcini e mazze di tamburo!). E anch'io ho dovuto tener conto di queste e simili norme. Quale allora il senso di queste regole? E perché quando queste regole non vengono rispettate, come nel caso della raccolta dei funghi, o dei tartufi neri e bianchi pregiati (altra attività a me familiare), negli anni il fondo boschivo si deteriora,

[1] "Il nostro non è mio".

le tartufaie si impoveriscono ed essiccano, portando intere zone alla fine della raccolta del tartufo?

Il tema dell'acqua rientra in questi casi che chiameremo "tragici", nei quali esiste un conflitto tra la libertà individuale, i beni comuni e il bene comune. In molte scelte, oggi sempre meno, la strategia che porta al massimo risultato individuale produce anche benessere collettivo. In altre, oggi sempre più, si verifica invece un conflitto tra gli obiettivi individuali e il bene comune: la teoria sociale, soprattutto quella che si è sviluppata negli ultimi 50 anni, ha cercato di studiare questi conflitti tra individuo e società, tra interessi privati e fallimenti collettivi, con risultati a volte interessanti altre volte meno, ma in ogni caso da conoscere poiché toccano forse il tema più importante per la convivenza pacifica dei prossimi decenni. È ormai molto evidente che le risorse strategiche dell'umanità sono sempre più soggette a tensioni: dall'energia all'acqua, dall'ambiente alla sicurezza, tutti tipici beni comuni. Se non saremo capaci di inventarci nuovi sistemi che tengano assieme libertà e beni comuni, il rischio grande è che si rinunci a uno dei due poli della tensione, o alla libertà individuale o ai beni comuni stessi, uno scenario ovviamente molto triste. Possiamo, e dobbiamo, cercare nuove vie.

Uno dei primi studiosi a porre la questione di quella che egli definì la «tragedia dei beni comuni» (*The tragedy of commons*) fu nel 1968 D. Hardin, un biologo, che pose all'attenzione degli studiosi un problema che dopo di lui è presente in ogni libro di teoria microeconomica, in un articolo pubblicato sulla prestigiosa rivista *Science*.

Quali le tesi di questo importante articolo?

Hardin esordisce nella sua analisi con l'affermazione che nella gestione dei fenomeni collettivi esistono delle tragedie, una parola che nel suo senso originario indica quelle situazioni nelle quali non esiste una soluzione ottima, perché ogni scelta comporta dei costi alti: non c'è dunque nella tragedia una scelta ottima che sia ottima per tutti e da tutte le prospettive da cui la guardiamo[2]. Nel caso della crescita della popolazione, dell'ambiente e dei beni collettivi o comuni (*commons*), la situazione è spesso quella di una tensione

[2] Si pensi – per uno tra i tanti possibili esempi – alla tragedia *Ifigenia in Aulide*, dove Agamennone, mentre è in viaggio verso Troia con la sua flotta, viene bloccato da una bonaccia sulle coste della Boezia; qui riceve dall'indovino Calcante il messaggio che se non sacrifica sua figlia Ifegenia la sua flotta non potrà riprendere il largo alla volta di Troia: è la tipica struttura "tragica", dove non c'è una soluzione ottima.

drammatica tra la libertà degli individui e la distruzione delle risorse stesse: come se la moneta con cui si paga la conquista della libertà (e l'assenza di mediatori gerarchici e sacrali) sia quella della distruzione delle risorse comuni dalle quali dipende la sopravvivenza delle nostre comunità, delle risorse che ci fanno vivere (come l'ambiente o l'acqua).

Noto, e ormai classico in ogni testo di microeconomia, è l'esempio che Hardin riporta nel suo *paper* relativo al pascolo comune e libero, dove ogni contadino porta a pascolare le proprie mucche. La scelta che massimizza la libertà e l'interesse individuale è quella di aumentare di una unità il bestiame al pascolo, poiché il vantaggio individuale è + 1, mentre la diminuzione del bene comune "erba" è soltanto una *frazione* di – 1, poiché il danno si ripartisce su tutti gli altri contadini: il beneficio individuale di aumentare l'uso del bene comune è maggiore del costo individuale. Questo maggior vantaggio individuale rispetto al costo individuale vale sempre, anche quando si fosse vicino all'ultimo metro quadro libero di erba (poiché anche 0.00002 è maggiore di 0.00001). Da qui l'incentivo individuale (per tutti e per ciascuno) ad aumentare sempre più i capi di bestiame al pascolo, fino ad arrivare alla distruzione del pascolo stesso, se… non accade qualcosa che limiti la libertà individuale. Dagli alberi nell'Isola di Pasqua al buco dell'ozono nell'atmosfera terrestre, dall'immondizia al bagno comune in ufficio, la storia dell'umanità ci racconta molte queste di tragedie di comunità e di civiltà piccole e grandi che sono «collassate» (come direbbe J. Diamond), poiché i loro membri non sono stati capaci di non oltrepassare il *limite*, il "punto critico" e di non ritorno, oltre il quale il processo diventa irreversibile – nell'isola di Pasqua, ad esempio, l'estinzione di quella popolazione non fu legata all'abbattimento dell'ultimo albero, ma all'aver superato, ad un certo punto e in modo inconsapevole, un limite, una soglia oltre la quale divenne inevitabile arrivare all'estinzione anche dell'ultimo albero.

La storia umana però ci racconta anche tante altre storie, dove le comunità sono state invece capaci di fermarsi in tempo, di coordinarsi, di limitare la libertà individuale e così di non collassare tragicamente, senza che nessuno abbia individualmente pianificato il collasso. Norme sociali, leggi, tradizioni antiche, usi e costumi potrebbero essere molte volte letti proprio come degli strumenti che le civiltà hanno inventato proprio per evitare di collassare. In realtà, la storia è più complessa di quella raccontata da Hardin, come ci ha mostrato, con i suoi lavori teorici, istituzionali e storici, la Nobel per l'economia 2009 Elinor Ostrom insieme al suo gruppo di ricerca interdisciplinare.

La domanda tragica che oggi è di fronte a noi è se nella gestione di questo "common" oltrepasseremo il limite e seguiremo il sentiero degli antichi abitanti dell'Isola di Pasqua, o saremo invece capaci di fermarci in tempo, di coordinarci, saremo capaci di quella saggezza individuale e collettiva che consente alle comunità – compresa la comunità mondiale degli esseri umani e delle altre specie del pianeta[3] – di non collassare e implodere, ma di vivere e crescere in armonia.

Un elemento chiave in questa realtà che stiamo esplorando, anche nella storia presente e futura dell'acqua, è l'emergere dell'individuo e delle sue libertà nella modernità. Nelle società tradizionali (normalmente piccole) c'era essenzialmente uno strumento: la gerarchia, che consentiva a qualcuno, normalmente sulla base di una legittimazione sacrale, di scegliere per tutti. In questo contesto gerarchico (tipicamente antico, ma presente ancora oggi in molte comunità) la tragedia del *commons* semplicemente non si pone, poiché non c'è un contrasto tra libertà individuale e bene comune, perché non esistono le libertà individuali. In quelle società il bene del re coincide con il bene del popolo, poiché la "funzione da massimizzare" è essenzialmente una sola (è l'antico concetto del popolo come unico organismo o corpo, come persona collettiva). In questa cultura olistica e sacrale cade di fatto la possibilità stessa della tragedia: davanti a una foresta o a un lago di pesca, il re pone dei limiti e tutti li rispettano. La tragedia dei *commons* per emergere ha bisogno dell'esistenza e della libertà degli individui: per questo essa è tipicamente un problema moderno.

L'altro elemento essenziale perché emerga la tragedia è che il bene sia consumato contemporaneamente da più persone (quella che si chiama in economia la "non escludibilità" del consumo), e anche che quel bene sia scarso; ci sia cioè *rivalità*: il consumo dell'altro riduce il mio. Se manca questa seconda e duplice caratteristica, non si parla più di bene comune o collettivo ma di bene *pubblico* puro.

2. Il caso dell'acqua

Innanzitutto, occorre una premessa culturale; ricordare cioè che in tante regioni del mondo più "povero" l'acqua non è mai stato un bene libero: per

[3] C'è infatti un problema sempre più grave dal punto di vista etico che è la distruzione delle altre specie in seguito ai nostri comportamenti ambientali.

molta parte della popolazione del mondo (quella delle zone aride) l'acqua è sempre stato un bene scarso, costoso, strategico, e quindi gestito con grande cura. La novità di questi ultimi decenni è la generalizzazione del problema dalle zone aride (dove il problema diventa sempre più grave) a molti altri Paesi del mondo, dove l'acqua nei millenni passati non era mai stata un bene scarso. Oggi, per ragioni varie ma legate in qualche modo al nostro modello di sviluppo, l'acqua sta assumendo tutte le caratteristiche di un bene comune globale (scarso e rivale), in certi casi nei rapporti tra individui, in altri tra comunità, in altri ancora tra stati.

Una precisazione. Mi rendo conto che parlare di acqua senza ulteriori specificazioni (potabile, per irrigazione, fiumi…) può apparire poco preciso e forse superficiale. In realtà la tesi che cerco (con altri) di sostenere è che oggi esiste una crescente scarsità globale dell'acqua, in rapporto ai bisogni umani (e animali) in generale, che rende possibile parlare di acqua (e basta) come tragedia dei *commons*.

Si pensi, a titolo di esempio, al problema dell'abbassamento delle falde acquifere nelle zone sub-sahariane e nelle regioni di confine tra Pakistan e India (come messo in luce anche dall'ultimo numero di *The Economist*, 15 ottobre 2010). Qui è evidente e lampante l'equivalenza tra il caso del pascolo comune di Hardin e lo sfruttamento delle falde acquifere: ogni individuo tende a pompare l'acqua in base ai propri bisogni (come la sete in Africa, ma anche annaffiare il giardino con il pozzo artesiano nelle ville sul lago di Albano!), ciascuno cerca di trarre il massimo vantaggio privato, e… la falda si abbassa sempre più, fino al superamento del punto critico che porterà all'essiccamento della fonte.

Il problema dell'acqua oggi presenta dunque diversi aspetti, tutti cruciali e campali se letto dalla prospettiva che qui stiamo esaminando.

a) In un mondo "post-gerarchico" o moderno, non può essere più il re, o il Leviatano hobbesiano, a decidere quanta acqua deve consumare ciascuno (anche perché, pur volendolo costruire, un Leviatano mondiale che imponga agli US o alla UE quanta acqua consumare non esiste). In fondo la gestione "statale" o "comunale" dell'acqua in passato funzionava non solo perché l'acqua in certi Paesi (penso a buona parte dell'Italia) non era scarsa, ma anche perché il mondo era di fatto ancora comunitario e gerarchico: non sceglievano gli individui, ma le comunità con i loro rappresentanti.
b) Se l'acqua oggi è diventato un bene collettivo, la soluzione non può essere "non far nulla" (ad esempio "non" privatizzare e basta), sempli-

cemente perché se non si fa nulla il bene si distrugge (in un mondo di individui che decidono liberamente). Il messaggio dei beni comuni è che il non far nulla equivale alla distruzione del bene stesso.

Che fare allora?

3. Le soluzioni "classiche"

La scienza sociale, soprattutto quella economica, ha proposto in questi ultimi decenni alcune soluzioni alla tragedia dei *commons*. Innanzitutto, ha tradotto il problema dei *commons* nel linguaggio della teoria dei giochi, mostrando che la tragedia di Hardin è in realtà un *Dilemma del prigioniero* (con molti giocatori): esiste cioè una strategia razionale per l'individuo, ma che non è ottima collettivamente[4].

Se descriviamo la tragedia dei *commons* come un *Dilemma del prigioniero* (con tanti giocatori), allora la prima soluzione della tragedia che salta in mente è la ripetizione del gioco, quando l'orizzonte futuro del gioco è indefinito (non si sa cioè quando il gioco finisce)[5]. In particolare, si afferma che sulla base

[4] Questa traduzione ha migliorato la sintassi del problema (lo si descrive meglio), ma non ha aiutato la *semantica*, poiché si perde velocemente e facilmente il rapporto con i problemi storici che sono sotto a quel gioco. Innanzitutto, come aveva già messo in luce M. Olson nel 1965 con il suo libro *La logica dell'azione collettiva*, perché la tragedia dei *commons* si verifichi occorre che le persone coinvolte siano abbastanza, un numero sufficientemente grande per non cogliere immediatamente che la tragedia pubblica è anche privata: in altre parole, se i pastori fossero solo due, ognuno vedrebbe facilmente che il suo uso eccessivo del pascolo lo sta distruggendo, e il problema da pubblico (di tutti, cioè di nessuno) diventerebbe privato (anche mio). Nel *Dilemma del prigioniero*, invece, la numerosità dei giocatori *non è* una dimensione rilevante del problema, perché in questo gioco il dilemma emerge anche con due persone soltanto. Questo è solo uno dei motivi che mi fanno dubitare sull'uso del *Dilemma del prigioniero* per capire la tragedia dei *commons* (altri sono messi in luce dai lavori di Elinor Ostrom). In altre parole, quattro filoni di ricerca sono partiti attorno agli anni Sessanta: Hardin (tragedia dei *commons*), M. Olson (logica dell'azione collettiva), teoria dei giochi (*Dilemma del prigioniero*) e teoria dei beni pubblici (con il tema del *free-riding*), che hanno tratti in comune (la difficoltà delle persone accomunate da interessi comune a raggiungere effettivamente il bene del gruppo o bene comune), ma anche tanti punti diversi, che oggi vengono invece, troppo semplicemente, fusi assieme in molti libri di microeconomia.

[5] In realtà, se guardiamo da vicino questo punto, vediamo subito che questa "soluzione" è un'ulteriore prova che la struttura logica del *Dilemma del prigioniero* non è adatta per comprendere la tragedia dei *commons*: che cosa significa far ripetere il gioco per l'abbassamento delle falde acquifere? È difficile descrivere questo problema con una logica strategica (cioè del tipo: quale è la mia migliore strategia data la mia previsione circa il comportamento razionale

dell'apprendimento dalle tragedie passate, se gli individui non sono miopi, i prigionieri hanno l'interesse personale e l'incentivo a "uscire dalla prigione" e cooperare senza bisogno di *enforcement* legale o esterno (giudici, tribunali…). Questa soluzione non sembra particolarmente utile (anche se non del tutto da scartare) per capire la storia di come le comunità reali risolvono le tragedie dei *commons*.

Come sviluppo di questa visione-soluzione individualistica e auto-interessata c'è poi la proposta di privatizzare il bene collettivo, suddividendolo in tante frazioni private (del bosco, del parco, del fiume…). In realtà, la suddivisione del bosco in tante parti individuali non è da demonizzare o da criticare sempre come anti-sociale: si pensi ai tanti casi (alcuni studiati in letteratura)[6] di gestione dei beni comuni in alcune aree del Trentino o dell'Emilia, dove boschi e terre sono gestiti sia in modo comunitario sia in modo individuale (ogni famiglia ha un pezzo del bene comune, con aspetti più comunitari riguardo alla suddivisione dei profitti dei boschi e delle terre)[7]. Il punto cruciale però è che molti beni comuni fondamentali (dall'ozono all'acqua) non sono "divisibili", e quindi occorre trovare soluzioni collettive.

Le altre due soluzioni classiche sono *il contratto sociale* (à la Hobbes: si crea con un patto artificiale un "Leviatano") o *l'etica individuale*.

La soluzione hobbesiana punta tutto sullo Stato (che crea un sistema di sanzioni e di istituzioni per implementarle): soggetti razionali sanno che se non si autolimitano la libertà individuale non riescono a coordinarsi tra di loro e ad uscire dalla tragedia, quindi con un contratto sociale creano il Leviatano – a prezzo della libertà individuale. Il problema decisivo (che si somma alla rinuncia della libertà) che va contro questa soluzione è che nei *commons* oggi più rilevanti non può essere implementata, poiché data la loro natura globale non esiste un Leviatano globale (e per fortuna!). Chi può creare un sistema di *enforcement* per far rispettare patti eventualmente stipulati dalle grandi potenze mondiali? I fallimenti degli accordi sulle emissioni di CO2, sullo sfruttamento dei fondali oceanici e sui beni pubblici internazionali sono fatti molto più eloquenti di qualsiasi discorso teorico.

degli altri con i quali interagisco?). La natura del "gioco" dei *commons* è già dinamica (non è statica), ma è una dinamica non rappresentabile dal *Dilemma del prigioniero*.

[6] Cfr., in particolare, i lavori di Marco Casari (citati in bibliografia).

[7] Un aspetto importante di questa antica convenzione riguarda l'impossibilità di ripristinare secolari istituzioni se vengono distrutte.

La terza soluzione punta, anche come reazione alla sfiducia delle soluzioni *top-down*, sull'*etica individuale* (sia essa kantiana o di altra ispirazione), dove il soggetto interiorizza la norma etica ("non inquinare", ad esempio) e la segue perché sa che, una volta interiorizzata la norma, è più felice seguendo quella data condotta morale[8]. In questa terza soluzione (che è comunque molto importante, e co-essenziale in qualsiasi soluzione seria del problema dei *commons*) il centro è *l'individuo*, mentre nella seconda è lo *Stato*.

Che cosa manca in questa storia di possibili soluzioni? Il grande assente è la società civile, che è una realtà che non possiamo definire né Stato né mercato (auto-interessato o capitalistico) né puramente una somma di faccende individuali-private.

Che cosa vuol dire allora prendere sul serio la società civile nel tema dell'acqua, e più in generale dei *commons*? A questa domanda dedico l'ultima parte di questa mia nota.

4. Alcune proposte "civili"

In un recente articolo, Amartya Sen, probabilmente l'economista politico più influente oggi in temi di politiche ambientali e di diritti umani, ha sottolineato che nel tema dei global *commons*, come l'acqua, «il problema importante è dato dal fatto che i Paesi industrializzati utilizzano una quota sproporzionatamente maggiore di ciò che definiscono "i beni collettivi globali" (global *commons*), ovvero il patrimonio di aria, acqua e altre risorse naturali di cui noi tutti, collettivamente, possiamo fruire». Soprattutto per i *commons* globali è evidente, come abbiamo accennato nel precedente paragrafo, che la soluzione hobbesiana dello Stato che sanziona i trasgressori non è implementabile. Ciò non significa dire che i capi di governo (e soprattutto gli elettori di questi capi, spesso molto poco lungimiranti) non debbano far di tutto per arrivare ad un patto sociale mondiale con sanzioni, ma questa non sembra la soluzione più semplice, né l'unica. Ma c'è di più. Gli utilizzatori dei beni comuni globali, come l'acqua, sono oggi miliardi di persone indipendenti le une dalle altre (non capi di governo); ciascuno massimizza propri obiettivi: coordinare

[8] Dal punto di vista tecnico, è come se i soggetti cambiassero le loro preferenze nel tempo fino ad includere nella propria funzione-obiettivo anche il bene pubblico: in questo modo il bene da *comune* diventa anche *privato* grazie a ricompense e sanzioni interiori, che fanno preferire il comportamento etico a quello non etico.

e limitare tutta questa gente è impresa ardua, se non impossibile. Da questa prospettiva, risulta importante la dimensione etica, individuale ed educativa, sebbene neanche questa può, da sola, presentarsi come *la* soluzione.

Eppure qualcosa va fatto, poiché è troppo urgente un nuovo patto sociale mondiale tra cittadini uguali e liberi (e non solo quelli del G20, ma tutti potenzialmente) che si auto-limitino nell'uso delle risorse comuni – come cercano di fare gli umili raccoglitori di funghi porcini. Sarebbe un patto diverso da quello hobbesiano (tendenzialmente illiberale) o quello fatto dai "capi" (di governo, di famiglia, di clan...): il nuovo patto sociale mondiale dovrebbe essere un patto della fraternità dopo l'uguaglianza e la libertà. Queste ultime due sono state la grande conquista della modernità, e hanno creato la democrazia, i diritti… ma si stanno, da sole, rivelando incapaci di gestire i beni comuni dai quali dipenderà molto, forse quasi tutto, del presente e del futuro. *Liberté* ed *egalité* dicono individuo; fraternità dice invece legame tra le persone, e senza legami, senza riconoscere che siamo legati perché insistiamo sulle stesse risorse comuni, non si esce dalla tragedia dei *commons*.

Tutto ciò ha implicazioni molto concrete. Torniamo al caso dell'acqua.

Se vogliamo che l'acqua sia gestita non solo dallo Stato, né solo dal mercato *for-profit* o capitalista (per i motivi appena accennati), allora occorre assegnare un posto importante alla società civile anche in tema di economia e di impresa. È necessario che la società civile esprima imprese efficienti (superando con ciò il grande limite delle imprese statali o pubbliche), ma che non abbiano come *scopo* o movente il profitto: l'impresa che massimizza il profitto non dovrebbe, in una economia civile, gestire i beni comuni, perché produce la tragedia dei *commons*, perché non sa fermarsi prima del limite (anche se regolamentata: è noto il fallimento dei controllori in tali ambiti, soggetti facilmente a "cattura"). Le imprese che si occupano di acqua (soprattutto quelle che si occupano del consumo di acqua: penso qui alle imprese delle acque minerali, spesso altamente for-profit e speculative) dovrebbero essere *imprese civili*, ancorate cioè ad una visione di comunione (*commons*) e di fraternità (legame), cioè che siano efficienti (non sprecano), ma che non abbiamo come obiettivo il profitto.

Ma per far ciò è necessario veramente un nuovo patto sociale, a più livelli, che includa mercato, famiglie, pubblica amministrazione e politica, un patto sociale che renda possibile questo cambiamento di paradigma.

5. Quali virtù nell'epoca dei beni comuni?

Una società civile dove ciascuno persegue semplicemente i propri interessi funziona bene, perché la cura dei propri interessi è espressione della virtù della prudenza da parte dei cittadini. Se, ad esempio, ogni cittadino di Milano si occupa dell'educazione dei propri figli, fa bene il proprio lavoro, sistema il giardino e paga le tasse per produrre i beni pubblici, se cioè a Milano abbiamo tanti «prudent men», come li chiamava Adam Smith, automaticamente anche la città è virtuosa. È questa, nella sua essenza, l'idea racchiusa dalla metafora più famosa del pensiero economico, quella della "mano invisibile": ciascuno persegue interessi privati e la società si ritrova provvidenzialmente anche con il bene comune. Anche per questa ragione, e in polemica con i moralisti a lui precedenti e contemporanei (penso a Mandeville o a Rousseau), per Adam Smith l'interesse personale non è un vizio ma è una virtù: la virtù della prudenza. Questa operazione "semantica" (la stessa parola *self-interest* cambia significato morale e da vizio diventa una virtù) è stata alla base della legittimazione etica della nascente economia politica e dell'economia di mercato che, occorre sempre ricordarlo, ha svolto un'importante funzione di civilizzazione del mondo, se la confrontiamo con il regime feudale.

C'è però un problema molto serio. La legittimazione etica dello scambio e questa visione virtuosa dell'interesse (visto come espressione di prudenza) hanno funzionato e funzionano in società semplici, dove il bene dei singoli è direttamente anche il bene di tutti, dove i beni sono soprattutto privati: lavatrici, panini, scarpe, pc, ecc. Se invece i beni diventano *comuni*, se i beni economici più importanti e strategici per noi e per i nostri nipoti, per i più poveri e per le altre specie sono cioè le energie non rinnovabili, foreste, laghi, mare, beni ambientali, acqua, discariche, ma anche la gestione di un condominio, o la convivenza nelle città multietniche, il discorso si complica terribilmente. Accade cioè che la virtù della prudenza non è più automaticamente una virtù del mercato, poiché non è più vero che ricercare l'interesse privato produce anche bene comune, perché accade che il bene individuale produca male comune.

Il più grande cambiamento della società globalizzata e post-moderna ha proprio a che fare con il tema dei beni comuni: che stanno diventando la regola, non l'eccezione. Siamo infatti entrati nell'epoca dei beni comuni. Oggi la qualità dello sviluppo dei popoli e della terra dipende sicuramente da scarpe, frigoriferi e lavatrici (i classici beni privati), ma molto più da beni (o mali) comuni come i gas serra, dallo sfruttamento delle risorse naturali, o dallo stock

di fiducia dei mercati finanziari (la crisi finanziaria può anche essere letta come una tragedia del bene collettivo *fiducia*), da cui dipendono poi anche i beni privati.

La domanda cruciale dell'oggi allora diventa: quali sono le tipiche virtù che il mercato e la società civile dovrebbero coltivare per poter affrontare e magari vincere le grandi sfide poste dai beni collettivi? Queste nuove virtù dovranno essere virtù immediatamente sociali, dove leggo da subito la mia azione in rapporto a quelle degli altri: da questa prospettiva, la riflessione filosofica e politica che si sta facendo sul tema della fraternità può essere un contributo molto importante.

La storia ha conosciuto molti momenti nei quali comunità, società e popoli sono stati posti di fronte al bivio che separa la fraternità dal fratricidio, due strade sempre confinanti e intrecciate, dai tempi di Caino. A volte abbiamo scelto la direzione della fraternità, altre, forse le più numerose, quella del fratricidio. Oggi il bivio è ancora di fronte a noi, e occorre far di tutto perché la direzione sia quella della fraternità. È in gioco il futuro stesso della nostra specie, e grazie a Dio siamo ancora in tempo.

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NATURE-BASED SOLUTIONS FOR WATER

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1. Nature-Based Solutions for Water

In 2004, the first African woman and first environmentalist, Wangari Maathai, received the Nobel Peace Prize. The Green Belt Movement she initiated not only fought environmental degradation, but her work also empowered women, enhanced livelihoods, and inspired women and girls everywhere. Wangari's work is so praiseworthy because its "contribution to sustainable development, democracy, and peace[1]" demonstrated how interlinked environmental issues are with so many other facets of society, such as social justice issues and women's rights. Now more than ever is Wangari's work relevant; addressing the future of complex environmental challenges will require the world to adopt similar intersectional approaches and solutions to make the world a more sustainable and resilient place.

One of the most promising, integrated approaches to addressing the global challenges of our times, climate change, food insecurity, water scarcity, and land degradation, is referred to as Nature Based Solutions (NBS). NBS uses or mimics natural processes to address contemporary water management challenges across landscapes and sectors, including agriculture, natural resources, forests, and rural and urban settlements.

Nature based solutions can help achieve 3 basic water management objectives: water availability enhancement, water quality improvement, and management of risks associated with water-related disasters and climate change.

Current water practices are dominated by traditional, human-built, or "grey" infrastructure with costly, out of date, and highly inefficient solutions. NBS can help address these problems with its own "green" infrastructure

[1] The Nobel Prize, *Wangari Maathai*, https://tinyurl.com/c8srsyr6.

as it can substitute, augment, or work in parallel with "grey" infrastructure in a cost-effective manner. NBS has so much potential because the solutions they provide aim to create alternative or complementing options for coping with insufficient or aging water infrastructure, while also improving system-wide resilience and performance. In other words, NBS aims to maximize benefits and system efficiency while minimizing costs and trade-offs, making them an attractive alternative or a complementing component to address problematic gray infrastructure. However, there is much debate still surrounding green vs. grey infrastructure. Beliefs persist that transforming infrastructure requires one set of infrastructure principles to be adopted over the other. This preconceived notion is unsubstantiated as using green infrastructure to complement gray infrastructure (and vice versa) is ideal and more efficient in the long run. Moreover, nature-based infrastructure promotes a circular economy that strengthens resource productivity, but also reduces waste and prevents pollution. NBS focus on shifting consumption patterns towards circularity by reducing, reusing, and recycling. Overall, this creates a restorative and regenerative economy, juxtaposing our current linear disposal-based practices.

Agriculture currently accounts for 70% of all water withdrawals worldwide and that figure will increase if current water management trends do not shift. Demand for food is estimated to increase by 50% by 2050 and water will play a critical role in meeting this demand. NBS can play a role in supporting both water and food security as its focus on sustainable ecological intensification of food production enhances ecosystem services through agricultural landscapes by improving soil and vegetation management. Furthermore, NBS also supplements irrigation practices and productivity by utilizing rain-fed systems that already account for the bulk of current production and subsistence farming. Building out rain-fed infrastructure not only enhances water management but also has profound livelihood and poverty reduction benefits. Urban food gardens, another nature-based solution, help increase the use of urban rainfall and reduce agricultural water demand in rural areas. Other urban food production benefits include shortening food supply chains and enhancing food chain resilience. Shortened food supply chains end up saving water as their proximity reduces food loss, while resilient food chains are better able to cope with to shocks such as those witnessed during the current pandemic. If our business-as-usual trends continue, our food systems (meaning both food consumption patterns and methods of food production) are estimated to account for 70% of the projected loss of biodiversity by 2050.

NBS can help address water availability in urban settlements too. Currently, 56% of the world's population live in cities and this figure is projected to increase to 68% by the middle of this century. NBS can help alleviate the pressures large urban populations put on water resources and water services by augmenting and regulating water supplies in urban settlements. Examples of urban NBS water solutions include urban reforestation, the restoration or construction of wetlands, river and floodplain integrated management, water harvesting, permeable pavements, and green spaces all of which collectively promote bioretention and soil infiltration. Urban green infrastructure, including green buildings, are an emerging phenomenon establishing new benchmarks and technical standards that embrace many NBS. Green infrastructure is used to manage and reduce pollution from urban runoff. Examples of this infrastructure include green walls, roof gardens, vegetated infiltration or drainage basins, and wetland integration to support wastewater treatment and reduce stormwater runoff. Both natural and constructed wetlands also biodegrade or immobilize a range of emerging pollutants, including certain pharmaceuticals, and often perform better than grey solutions.

Urban green infrastructure can also significantly improve urban climates through shading and the cooling effects of evaporation – thus enhancing the quality of life for citizens as a cascading co-benefit.

Forests, wetlands, and grasslands, as well as crops and soils managed with conservation agriculture, can play important roles in regulating water quality. These ecosystems reduce sediment loading, capture and retain pollutants, and recycle nutrients. Non-point, nutrient-rich source pollution from agriculture remains a critical problem worldwide, especially in developing countries. However, NBS improve nutrient recycling within soils, thus lowering fertilizer use and reducing nutrient run-off or groundwater infiltration.

Water-related risks and disasters, like floods and droughts, associated with climate change-induced atmospheric variability, result in immense human and economic loss globally. This figure will grow, although already around 30% of the global population is estimated to reside in areas or regions routinely impacted by flood or drought events. NBS tackle these challenges by strengthening flood management practices, restoring floodplains, and managing water infiltration or overland flow, capitalizing on land resources to store excess water. Droughts are not limited to just arid areas. Despite the stereotype, droughts are still a disaster risk in regions not traditionally water scarce. The mix of potential NBS for drought mitigation is the same for areas in a

constant state of water surplus; the aim is to improve soil and groundwater storage capacity overall in landscapes to provide water cushions in periods of extreme water scarcity.

The construction of large storage structures is no longer a practical tactic to manage and secure water resources. Silting, runoff, environmental concerns, social impacts, increasing costs, limited spatial options, and unfavorable public opinion renders large-scale reservoir development impracticable. In many cases, more ecosystem-friendly forms of water storage, such as natural wetlands, can improve moisture levels, more efficiently recharge groundwater resources, are a sustainable, and a more cost-effective option than traditional dam or grey infrastructure. Additionally, constructed wetlands are used for wastewater treatment and provide biomass for energy production. Wetland versatility highlights how ecosystem creation, integration, and restoration can create or improve fisheries, forest resources, biodiversity, landscape values, cultural and recreational services. All these combined benefits improve livelihoods, reduce poverty, and create new employment opportunities.

Despite the copious benefits NBS offer, the world has been slow to embrace their adoption. Consequently, NBS account for less than 5% of the total expenditure in water resources management, so it remains a highly under-utilized resource. Transitions to NBS are happening, but full-fledged societal transformation will require substantial, global financial backing. Recently, global financial institutions have started to support these natural options publicly and financially, advocating for them to become a part of climate financing. Economic support for nature-based agendas has experienced varying degrees of success. Progress is slow and no widespread, sweeping adoption of natural solutions have happened yet, but there is hope.

In addition to a growing number of public sector investments by governments and municipalities, businesses and industries are also increasingly promoting NBS. Their goal is to improve water security for their operations as a means of mitigating future challenges that can arise from water scarcity. A recent stocktaking exercise by UNFCCC and its partners revealed that 28% of major food suppliers have committed to mainstream nature-based solutions towards deforestation-free supply chains and a full adoption of regenerative agriculture and land restoration by 2030.

Facilitating more widespread adoption and implementation of NBS requires the standardization of new engineering and ecosystem accounting frameworks. Standardizing the NBS framework can measure progress

and better orient leaders, policymakers, financial institutions, and engineers through their green transition process. Initiatives like the IUCN Global Standard for Nature-based Solutions, the European Green Deal and the UN Statistical Commission's Ecosystem Accounting Framework reflect the applications of new standardization attempts to make NBS a reality and to attract attention for private and public investment. Organizations such as the FAO, UNEP, UNDP, World Bank, and other development banks also contribute to standardizing green infrastructure and ecosystem economics. The FAO is the largest global entity advocating for NBS as they recognize and endorse the plethora of benefits these solutions offer.

Once NBS becomes formally and globally recognized, infrastructurally and economically, NBS will become a reality. As global leaders start to acquire a more thorough understanding of the holistic co-benefits of environmental investment, the transition to greener societies will be easier than previously imagined.

Over the next 50 years, the world as we know it will change atmospherically and become increasingly uncertain. To combat these changes and remain resilient, we must embrace a new era focused on mainstreaming and adopting nature-based solutions. Embracing nature's ecosystem services will only accelerate action in sustainable economic development, climate change mitigation and adaptation, and disaster risk reduction and urban management. Our future is bright once we implement nature-based solutions as their impact will last and contribute to prosperity, peace, and stability – echoing the lasting legacy of Wangari Maathai.

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THE VALUE OF WATER FOR PEACEBUILDING

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Keywords: water governance, clean water, Jordan River, Middle East, climate change, sustainable development goal, environmental peacebuilding, and environmental education.

Thank you very much for the opportunity to present and thank you to the organizers for organizing this conference. I think that with regards to the Jordan River, much depends on us, of course, and the work of EcoPeace Middle East, which is truly unique because it's the only organization that exists in any field that brings Palestinians, Jordanians, and Israelis together. And the river that you're referring to, is perhaps the most famous river on Earth: an iconic river called the River Jordan. We're particularly concerned about the dire situation of the lower stretch of the Jordan River from the Sea of Galilee, down to the Dead Sea. What has happened to the Jordan River is a terrible demise, much due to conflict and competition over scarce water resources. We're a semi-arid part of the world, where conflict has very much led to those that can, simply grabbing as much water as they can at the expense of their riparian neighbors and, of course, to the complete demise of the natural ecosystem itself.

The Jordan River has seen about 95% of its waters diverted – half by Israel, and the other half by Syria and Jordan. Instead of fresh water, sadly, lots of sewerage, agricultural runoff, and fishpond waste have been emitted in its place. In this river holy to Judaism, to Christianity, and to Islam, 5% of the so-called liquid that's left in the river is not a holy mix at all of clean water. So, despite the fact that the three Abrahamic faiths see the river as a holy river, conflict hasn't led to cooperation nor sustainable management of the river; this is where the work of EcoPeace has come in to try to reverse the situation.

Firstly, by focusing on research and understanding the level of the demise, we can move from a blame game to a position of calling on the respective sides to take responsibility. The respective parties can work both towards

removing sewerage and removing pollutants from the holy river, as well as releasing at least some fresh water back to the river. The work of EcoPeace is focused on this meaningful stakeholder engagement. Palestinian, Jordanian, and Israeli youth have been working together in the programs we run in and out of schools. These programs create youth water trustees to learn about their water reality, their neighbor's water reality, and the interconnectedness of the two. The youth come to understand that we are completely dependent on each other. It is this youth activity that has created stakeholders' support for municipal leadership.

Today, the River Jordan, instead of spanning 100 meters wide, has become just four meters wide. It would literally be a health hazard to be standing in the river, as indicated in an event dubbed the "Big Jump," where Israeli, Jordanian, and Palestinian mayors jump into the Jordan River together (with their flags). Despite the fact that they are not best friends and that there is an ongoing conflict, stakeholder engagement has helped them come to understand that the demise of the river makes them all losers. The demise of the river and their inability to clean it has been at the expense of their respective populations. It is actually the young people that have been the real leaders. They have created a situation of political will which enabled the mayors to literally stand up and get wet together in the Jordan River, and they are calling on the national governments and international community to change policies and to promote cross border cooperation towards the rehabilitation of the river.

It is these types of actions that have led to over $100 million worth of investments in starting to get the sewage out of the Jordan River, by building wastewater treatment plants on the Palestinian side, on the Jordanian side, and on the Israeli side. And in 2014, for the first time, in over 50 years, fresh water started to be released again, from the Sea of Galilee, into the lower Jordan River. While the quantities of water released are not at the rates that we would still like to see, it still set an important precedent. In this sense, water very much can be an avenue and entry point for peacebuilding. If we engage in a meaningful way, we can empower our communities politically, first and foremost through education, and then through municipal leadership which then needs to translate to national governments.

The president at the time of the UN Security Council, from Germany, invited Nada Majdalani, the EcoPeace Palestinian co-director, and myself, to present this work at the UN Security Council. We were pleased to get a positive response from both the Palestinian and Israeli Ambassadors to the

UN, who were supportive of this bottom-up, community-based effort. With regards to support from other members of the international community, the Finnish Foreign Minister is today championing the efforts to rehabilitate the Jordan River as part of the call for a Middle East Green Blue Deal that Eco-Peace recently launched. This Green Blue Deal is based on, and inspired by, the European Green Deal as well as the efforts in the United States to fight climate change, with the understanding that climate change is about to make the current situation exponentially worse. Therefore, the demise of the Jordan River is a reflection of the demise which will continue to occur should we not turn towards cooperation – cooperation both to clean up and bring healthy water back to the river, and also to fairly share water resources between our three populations. The message is very clear; together, we as Palestinians, Jordanians, and Israelis, believe that issues like water cannot wait. If we are to see a river holy to half of humanity be rehabilitated again, and if we, as people living in a very dry part of the world, are going to survive and overcome together the challenges of climate change, working together is not a privilege – it is an absolute necessity.

BUILDING BRIDGES OVER TROUBLED WATERS: SHARED WATERS AND PEACE

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Keywords: water and peace, transboundary water cooperation, water diplomacy, dialogue, climate change and uncertainty, communication, and faith based leaders.

As the old adage goes – water knows no border. This is an ambiguous dilemma: a 'rival' is the quintessential competitor – the opponent on the opposite riverbank; 'riva'. Yet, each river is also a coming together, a pretext to create bonds through bridges, and a Pontiff is precisely the one who facilitates 'ponti', bridges. How then can water serve as a force for coming together, an entry point for dialogue, an inspiration for conflict prevention and sustainable peaceful relationships?

1. Understanding Peace

Peace is the absence of conflict. Efforts to support peace range from preventing escalation of political tensions into armed violence, to facilitating inclusive dialogues. In the context of transboundary water cooperation, this can

[1] After submitting this article, she joined the Environmental Law Institute (United States) as Senior Manager of International Programs.

also mean supporting efforts that enhance understanding of cooperative approaches in place of unilateral management. An important part of supporting cooperation over shared waters is raising public awareness about the benefits of cooperation for all riparian communities. Faith based and other opinion leaders and influencers can, and in some cases already do, play an instrumental role in this process. Pope Francis' historic four-day visit in March 2021 to Iraq that included a meeting with Grand Ayatollah al-Sistani, the spiritual leader of Iraq's Shia community is such as example. In this tradition, during his 2018 visit to the Democratic Republic of Congo (DRC), Pope Francis called on all communities to cease all forms of violence. Linking water and peace, Pope Francis' 2014 visit to the Jordan River, highlighted the significance of the holy site for the region's Abrahamic traditions. Such dialogue is an important incentive for peace, sharing the message that cooperation yields broader and longer-term benefits for society than unilateral action.

2. Sustainable Cooperation – How?

Evidence demonstrates that there are more cooperative efforts and ongoing water dialogues than violent events spurred by competition over shared waters. The Indus Waters Treaty signed in 1960 by India and Pakistan, after nine years of negotiations, is an oft-cited example of a water agreement navigating throughout several security-related conflicts between the parties. Although around 60% of transboundary river basins lack any form of institutionalized cooperative agreement; coordination and dialogue efforts to build shared knowledge and priorities on water and climate-related challenges often exist informally – in many cases without any formal framework agreements. The ratification of the 2021 Memorandum of Understanding (MoU) on scientific and technical cooperation between Iraq and Turkey is such an example. Political will is needed to elevate and sustain informal dialogues and initiatives, which in turn can provide broad political constituencies for formal efforts – creating an environment conducive to compromise and cooperation.

Spiritual values drive individual behaviour and practice for more than 80%[2] of the world's population[3]. *Water diplomacy*[4] approaches can come nat-

[2] Cfr. UNEP, Faith for Earth Initiative, 2019.

[3] Cfr. E. Yaari *et al.* "People and Planet: Faith in the 2030 Agenda". Stockholm 2020, SIWI Report.

[4] M. Klimes – E. Yaari, *Water Diplomacy – Facilitating Dialogues*, SIWI Policy Brief, 2019, https://tinyurl.com/4xwk6284.

urally to faith based communities and leaders, engaged beyond project cycles and political terms, attuned, like their environmental colleagues, to long term perspectives. Pope Francis, in the Encyclical Letter *Laudato si'*, asked, "What kind of world do we want to leave to those who come after us, to children who are now growing up? […] What is the goal of our work and all our efforts?" The Grand Mufti of Amman, Jordan, a long-time champion of innovative water wise fatwa in Jordan encourages the public to act in partnership to reduce water demand where possible, safeguard fresh water, and encourage the use of treated wastewater for irrigation – sharing his rich experience and knowledge with other faith-based communities from around the world during water dialogues such as during the 2018 World Water Week. When the new government in Somalia recently embarked on water diplomacy training efforts – they began their journey with blessings and prayer.

Water diplomacy recognizes that there are many different actors that have the ability to create solution spaces for conflicts over water and that can create windows of opportunity for cooperation over water. These actors are inclusive of formal government officials (state and local level) and informal non-state/government actors, private sector, civil society, media, and others. While conventionally, water diplomacy is seen as official high-level interaction and dialogue between nation-states, diplomacy is now defined according to various tracks which vary in terms of formality, actors involved, and purpose[5].

3. Communicating the Benefits in a Time of Uncertainty

Public communication surrounding cross-border cooperation over shared waters remains a sensitive subject not only in the water-scarce and conflict-prone regions of the Middle East and North Africa, Central/South Asia – but elsewhere where transboundary water management issues are characterized as national and human security issues. With limited information about current and future water availability and needs, leaders and the general public are challenged to see the broad environment, economic, and social benefits associated with transboundary water cooperation – and act for future generations.

With the rising anxiety that accompanies increasing water and climate uncertainties – faith based leadership is critical in driving the narrative around

[5] Cfr. Klimes – Yaari, *op. cit.*

shared waters away from zero-sum competitions and incompatibilities and towards resilient and peaceful cooperation. Listening and learning from faith communities' long history of advocating for the valuing of water as a common good – for example – as well as enhancing support to faith leaders in championing water diplomacy is an opportunity for learning and growing our shared alliance to achieve a peaceful and sustainable future. In this ever uncertain landscape, inclusive water diplomacy is nurtured by continuous learning and experience sharing – across boundaries and across communities.

IL VALORE DELL'ACQUA PER LA PACE

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Parole chiave: pace, cooperazione, bene comune, gestione idrica e Bibbia.

Il messaggio inviato a nome del Santo Padre al Forum Mondiale dell'Acqua, svoltosi nel marzo 2022 in Senegal, insisteva sul diritto umano di accedere all'acqua e ai servizi igienici, nonché sulla pace, auspicando che l'acqua diventi «un simbolo di accoglienza e di benedizione, un motivo di incontro e di collaborazione che faccia crescere la fiducia reciproca e la fratellanza». Un augurio per lavorare «insieme alla realizzazione del diritto all'acqua potabile e ai servizi igienici per ogni persona umana» e per contribuire «a fare dell'acqua un vero simbolo di condivisione, dialogo costruttivo e responsabile a favore di una pace duratura, in quanto edificata sulla fiducia»[1].

Prendendo spunto da un tale auspicio, avviamo questa riflessione sul valore dell'acqua per la pace traendo spunto dalla Sacra Bibbia:

> In quel tempo Abimèlech con Picol, capo del suo esercito, disse ad Abramo: «Dio è con te in quanto fai. Ebbene, giurami qui per Dio che tu non ingannerai né me né i miei figli né i miei discendenti: come io ho agito amichevolmente con te, così tu agirai con me e con il paese nel quale sei forestiero». Rispose Abramo: «Io lo giuro». Ma Abramo rimproverò Abimèlech a causa di un pozzo d'acqua, che i servi di Abimèlech avevano usurpato. Abimèlech disse: «Io non so chi abbia fatto questa cosa: né tu me ne hai informato, né io ne ho sentito parlare se non oggi». Allora Abramo prese alcuni capi del gregge e dell'armento, li diede ad Abimèlech: tra loro due conclusero un'alleanza. Poi Abramo mise in disparte sette agnelle del gregge. Abimèlech disse ad Abramo: «Che significano quelle sette agnelle che hai messe in disparte?». Rispose: «Tu accetterai queste sette agnelle dalla mia mano, perché ciò mi valga di testimonianza che io ho scavato questo pozzo». Per questo quel luogo si chiamò Bersabea, perché là fecero

[1] P. Parolin, Messaggio a nome del Santo Padre in occasione del 9° Forum Mondiale dell'Acqua organizzato a Dakar, 21 marzo 2022.

> giuramento tutti e due. E dopo che ebbero concluso l'alleanza a Bersabea, Abimèlech si alzò con Picol, capo del suo esercito, e ritornarono nel paese dei Filistei. Abramo piantò una tamerice in Bersabea, e lì invocò il nome del Signore[2].

L'immigrato Abramo (forestiero nella terra dei Filistei) e la sua tribù si trovano in una situazione scomoda: il re Abimèlech che li ha accolti nel suo territorio palesemente li tollera di malavoglia. Da una parte, egli sa che Abramo è un profeta protetto dal Signore; dall'altra, i suoi sudditi si azzuffano con la gente di Abramo a proposito di pozzi. Il sovrano, poi, parlamenta con Abramo accompagnato nientemeno che da Picol, ossia (diremmo oggi) il suo Capo di Stato Maggiore. Una chiara mossa intimidatrice. Possiamo anche dubitare del fatto che il re stia dicendo la verità quando spiega: «Ne ho sentito parlare se non oggi». Probabilmente è al corrente (e proprio per questo è in compagnia di Picol). Abramo, dal canto suo, avverte la necessità di far riconoscere ufficialmente e pubblicamente che egli ha «scavato questo pozzo» (oltre a rivelarsi un uomo con un certo fegato poiché rimprovera il re).

La scena narra una dinamica di conflitto per il controllo di una sorgente d'acqua, nello specifico un pozzo: un'opera dell'ingegno umano che consente di attingere acqua per dissetarsi, per l'igiene, per il gregge e per le coltivazioni. Un'opera importantissima in una zona arida. Azzardandoci a leggere tra le righe, possiamo supporre che Abramo era più bravo a trovare acqua e costruire pozzi rispetto ai sudditi di Abimèlech (altrimenti che motivo avrebbero avuto di usurpare un pozzo? Se la gente di Abramo stava "solo" prendendo troppa acqua mettendo a repentaglio i pozzi degli autoctoni, questi ultimi avrebbero semplicemente richiuso il pozzo). Si intuisce una certa gelosia, forse rafforzata da considerazioni demografiche.

Considerando fatti di cronaca recenti, si possono constatare: prolungate tensioni (e talvolta tentativi di mediazioni) attorno a dighe o a cantieri di dighe che interessano fiumi transfrontalieri; conflitti per accedere all'acqua o per impedire al rivale di accedervi; conflitti in zone strategiche per l'approvvigionamento idrico (per esempio dove nascono importanti fiumi).

L'acqua indubbiamente è un fattore rilevante nelle analisi e strategie geopolitiche[3]. Nel suo saggio *Water Wars*, Vandana Shiva descrive numerosi con-

[2] *Genesi* 21, 22-33.

[3] Cfr. A. Chauprade, *Géopolitique. Constantes et changements dans l'histoire*, 3e édition, Ellipses, Paris 2007, pp. 643-696; E. Borgomeo *et al.*, *Flux et reflux* : vol. 2. *L'eau dans l'ombre*

flitti collegati all'uso dell'acqua, alla sua fornitura e al suo accaparramento[4]. Sono noti i casi di uso dell'acqua come arma, o della violenza armata che colpisce infrastrutture idriche[5] (malgrado i divieti del diritto internazionale).

> In recenti conflitti armati, Stati e gruppi armati non statali hanno distrutto e occupato impianti idrici. I sistemi di approvvigionamento idrico vengono meno: le condotte di approvvigionamento vengono deliberatamente sabotate o le risorse idriche vengono inquinate per intimidire i civili. Gruppi armati non statali occupano dighe e sbarramenti, e li utilizzano per inondare o costringere alla fame le popolazioni a valle per sconfiggerle[6].

Anche le dinamiche migratorie possono innescare tensioni. Un improvviso afflusso di migranti in condizioni caotiche può creare tensioni per l'accesso all'acqua: tensioni con gli abitanti della zona (che devono condividere l'acqua, o che vedono i rigagnoli locali insudiciati dall'aumento esponenziale della defecazione all'aperto) e/o con le autorità (non è detto che sia facile approvvigionare in acqua un nuovo campo di rifugiati). Si potrebbero citare vari casi. Per converso, «l'esaurimento delle risorse naturali di base provenienti dalla terra – e dall'acqua in particolare – può causare lo sfollamento temporaneo o permanente di intere famiglie e comunità»[7]: l'acqua sovrabbondante può distruggere raccolti e beni, la siccità prolungata può a sua volta mettere in pericolo i raccolti, i greggi, l'intera economia di una regione[8].

Uno studio di riferimento, pubblicato da un gruppo multinazionale di esperti, spiega inoltre che

des conflits dans la région Moyen-Orient et Afrique du Nord. Résumé analytique. Édition de conference. Groupe de la Banque Mondiale, Washington D.C. 2021, pp. 2-5.

[4] Cfr. V. Shiva, *Water Wars. Privatization, pollution and profit*, India Research Press, New Delhi 2002, pp. IX-XIV.

[5] Cfr. Geneva Water Hub, *The Geneva list of Principles on the protection of water infrastructure*, Genève 2019, pp. 19-29.

[6] Gruppo di esperti di alto livello su acqua e pace, Rapporto *A Matter of Survival*, Genève 2017, p. 21 (traduzione della citazione a cura del Dicastero per il Servizio dello Sviluppo Umano Integrale).

[7] Sezione Migranti e Rifugiati e Settore Ecologia Integrale del Dicastero per il Servizio dello Sviluppo Umano Integrale, *Orientamenti pastorali sugli sfollati climatici*, Città del Vaticano 2021, p. 15.

[8] Cfr. FAO, *Water stress and human migration: a global, georeferenced review of empirical research*, Land and Water discussion paper 11, Roma 2018, p. 9.

> in tutto il mondo, 153 Paesi condividono fiumi, laghi e falde acquifere. I bacini transfrontalieri coprono più della metà della superficie terrestre, rappresentano circa il 60% del flusso globale di acqua dolce e ospitano oltre il 40% della popolazione mondiale[9].

Ovviamente ad essere transfrontalieri non sono solo le acque di superficie, ma anche le riserve idriche sotterranee[10]. Dunque, potenziali cause di tensioni ce ne sono laddove due o più Paesi si trovano a disporre della medesima acqua: devono fare i conti non solo con il tasso di rigenerazione della risorsa, ma anche con le intenzioni dell'altro Paese. «Se da un lato l'acqua costituisce molto raramente l'unica – e quasi mai la principale – causa di conflitti tra nazioni o all'interno di esse, dall'altro ha il potenziale di esacerbare le tensioni esistenti e di impedire un avanzamento nella risoluzione di conflitti più ampi già esistenti»[11]. Si verificano tuttora anche casi – sui quali non mi dilungo – di tensioni per il controllo di determinate zone costiere e rotte navali, nonché atti di pirateria[12].

Oramai, «per ragioni varie ma legate tutte al nostro modello di sviluppo, l'acqua sta assumendo tutte le caratteristiche di un bene comune globale (scarso e rivale)»[13].

Torniamo ora alla *Genesi*: la strada che seguì Abramo è quella della sincerità, del dialogo, del tentare un compromesso. E questo, precisamente, partendo dall'acqua del pozzo: cioè l'acqua potabile e l'acqua per l'irrigazione (all'epoca, considerato il bassissimo tasso di inquinamento nei fiumi e nelle falde sotterranee, possiamo supporre che la medesima fonte di acqua andasse bene per entrambi gli scopi).

Il cosiddetto "oro blu" è così importante che esorta a collaborare: può essere un punto di incontro da cui scaturiscono la condivisione e la collaborazione (tema affrontato all'inizio di AFV e in vari documenti pubblicati dall'UNESCO). L'importanza dell'acqua e la sua necessità ne fanno un el-

[9] Nazioni Unite e UNESCO, *Progress on Transboundary Water Cooperation. Global baseline for SDG Indicator* 6.5.2, 2018, p. 9 (traduzione del Dicastero).

[10] Alle quali le Nazioni Unite hanno dedicato il World Water Development Report di quest'anno e alle quali dedicheranno un importante vertice nel dicembre 2022.

[11] Catholic Relief Services, *Water and Conflict. Incorporating Peacebuilding into Water Development*, Baltimore 2009, p. VIII (traduzione della citazione a cura del Dicastero).

[12] Cfr. F. Fornari, *Upheaval in the Horn of Africa*, «Freedom from Fear Magazine» (2009) Issue 3, pp. 9-13.

[13] L. Bruni, *Il significato del limite nell'economia dei beni comuni*, «Sophia» III (2011-2), p. 217.

emento centrale di comunità. Una popolazione può essere unita anche per l'acqua e attraverso l'acqua, se si convince che l'acqua è troppo preziosa per essere contesa, accaparrata, inquinata gravemente o sprecata.

Pertanto, una strada da percorrere è prendere sul serio le parole del Santo Padre: «Salvaguardare l'acqua come bene comune, il cui uso deve rispettare la sua destinazione universale»[14]. La destinazione universale dei beni è un principio importante quanto sfidante[15]. Per quanto concerne la destinazione universale dell'acqua potabile, bisogna innanzitutto crederci: cioè essere convinti che l'acqua sia destinata a tutta la generazione e a tutte le generazioni; inoltre, bisogna adoperarsi in tal senso. Visione e impegno. La sfida è quella di «prendersi cura in comune di un bene comune affinché ne usufruiscano tutti in vista della comune vocazione a uno sviluppo integrale, tutelando la sostenibilità della nostra casa comune in cui abiteranno i nostri eredi»[16]. Oltre a promuovere in termini generici "l'acqua bene comune", è opportuno soffermarsi su ciò che implica, ai vari livelli partendo da quello locale, gestire in comune una determinata fonte idrica (sorgente, pozzo, lago…) che rappresenta un bene diverso a seconda dei casi: più o meno scarso, più o meno rivale, più o meno escludibile o facile da difendere.

Probabilmente, in passato, la gestione comunitaria e a livello locale dell'acqua ha funzionato soprattutto perché questa era acqua meno scarsa (minor fabbisogno pro-capite, minore popolazione) e anche perché era minore il tasso di inquinamento. Le cose sono cambiate, e in molti casi la gestione comunitaria è più difficile, in determinate zone urbanizzate ha poco senso; cionondimeno questa gestione comunitaria rimane importante per affrontare le sfide idriche in molte zone rurali che sono indietro per quanto concerne l'accesso universale all'acqua potabile.

> Le modalità di gestione dell'acqua in molte aree rurali comportano un grande coinvolgimento delle comunità locali; ad esempio, quando si tratta di decidere di scavare un pozzo o di scegliere le modalità con cui utilizzare o condividere una sorgente, la possibilità di accedere a una determinata zona di pesca, di prelevare una certa quantità di acqua da un fiume (stabilendo generalmente un regolamento del diritto di accesso all'acqua, o *water tenure*). La gestione comunitaria e

[14] Francesco, Angelus, 8 novembre 2020.

[15] Cfr. Pontificio Consiglio della Giustizia e della Pace, *Compendio della Dottrina sociale della Chiesa*, Libreria Editrice Vaticana, Città del Vaticano 2004, pp. 171-184.

[16] T. Vinciguerra, "Il diritto all'acqua al tempo del Covid", «L'Osservatore Romano», 14 novembre 2020.

> la frequente presenza di comitati incaricati di dirimere i litigi (se non un vero e proprio tribunale) sono aspetti importanti della vita sociale e contribuiscono alla responsabilizzazione della popolazione[17].

Anche in Paesi ricchi e industrializzati esistono ancora sistemi (un insieme di consuetudini e istituzioni) comunitari per la gestione di determinate questioni idriche. Nel sud-ovest degli Stati Uniti d'America, per esempio, sono le comunità locali che, collettivamente, mantengono in buono stato i canali d'irrigazione conosciuti col nome *acequias*, e il flusso delle acque in ogni *acequia* viene gestito da una commissione eletta[18].

Elinor Ostrom, prima donna a ricevere il Nobel per l'economia, ha studiato la gestione in comune di determinate risorse naturali (quali boschi e acqua per irrigare) mostrando l'importanza di una tale gestione[19] che, in vari casi, consente la perennità di queste risorse[20] (evitando la distruzione delle risorse oppure l'alternativa della lottizzazione e privatizzazione). In India, "collective water rights and management were the key for water conservation and harvesting. By creating rules and limits on water use, collective water management ensured sustainability and equity"[21].

Prendendo cura in comune dell'acqua si creano consuetudini, si vive il «dono che è l'incontro con l'umanità al di là del proprio gruppo»[22], ci si abitua a «identificarsi con l'altro»[23] che ha sete pure lui, che deve irrigare pure lui. La recente Enciclica *Fratelli tutti* insiste molto su questo tema, spiegando che un essere umano

> non giunge a riconoscere a fondo la propria verità se non nell'incontro con gli altri: "Non comunico effettivamente con me stesso se non nella misura in cui comunico con l'altro". Questo spiega perché nessuno può sperimentare il valore della vita senza volti concreti da amare. Qui sta un segreto dell'autentica esistenza umana, perché "la vita sussiste dove c'è legame, comunione, fratellanza; ed è una vita più forte della morte quando è costruita su relazioni vere e legami di

[17] AFV, 26

[18] Cfr. R. Neuwirth, *Centuries-old irrigation system shows how to manage scarce water*, NationalGeographic.com, 17 maggio 2019.

[19] Cfr. E. Ostrom, *Governing the Commons*, University Press, Reissue edition, Cambridge 2015.

[20] Cfr. *Ibid.*, p. 83.

[21] Shiva, *op. cit.*, p. 12.

[22] Francesco, Enciclica *Fratelli tutti*, 90.

[23] *Ibid.*, 84.

> fedeltà. Al contrario, non c'è vita dove si ha la pretesa di appartenere solo a sé stessi e di vivere come isole (…)"[24].

L'incontro e soprattutto la relazione generano sempre una potenziale vulnerabilità, è indubbio. Tessere legami comporta smantellare le nostre paure, accettare i nostri limiti e persino acquisire una migliore conoscenza di noi stessi. Ma, precisa l'Esortazione post-sinodale *Christus vivit*, se

> lo facciamo pensando al bene di tutti potremo realizzare la magnifica esperienza di mettere da parte le differenze per lottare insieme per uno scopo comune. Se riusciamo a trovare dei punti di coincidenza in mezzo a tante divergenze, in questo impegno artigianale e a volte faticoso di gettare ponti, di costruire una pace che sia buona per tutti, questo è il miracolo della cultura dell'incontro[25].

Inoltre, in tutto il mondo 153 Paesi condividono fiumi, laghi e falde acquifere. Ma solamente 84 «bacini hanno organismi comuni di gestione dell'acqua, e molti di questi non sono considerati efficaci. Il numero di falde acquifere condivise senza organismi comuni di gestione – oltre 400 – è significativamente più elevato»[26]. Eppure, stando sempre ad AFV:

> la presenza di comprovati meccanismi di cooperazione transfrontaliera nel settore idrico è un importante contributo alla pace e alla prevenzione dei conflitti armati. Meccanismi e commissioni fluviali comuni posti in essere tramite accordi sulle risorse idriche possono favorire la comunicazione e il dialogo, migliorando così le relazioni tra i gruppi al di là della loro funzione abituale di promozione di una gestione comune delle risorse idriche. Esiste un insieme di norme, sancite da trattati e convenzioni, che si applicano a fiumi, laghi, mari, bacini e risorse sotterranee condivisi a livello internazionale. Tali approcci – orientati alla comprensione reciproca, alla condivisione di informazioni, alla ricerca e alla realizzazione di soluzioni comuni – costituiscono la cosiddetta "diplomazia dell'acqua"[27].

Esistono casi molto studiati come, per esempio, la cooperazione tra vari Paesi attorno al fiume Senegal e attorno al Danubio. Queste cooperazioni sono considerate da vari esperti validi meccanismi di pace. Difatti, una cooperazione attiva nel settore idrico non significa solamente firmare un trattato per suddividersi l'acqua, per scambiarsi informazioni oppure per creare

[24] *Ibid.*, 87.

[25] Francesco, Esortazione Apostolica *Christus vivit*, 169.

[26] Gruppo di Esperti Alto Livello su Acqua e Pace, *op. cit.*, p. 14 (traduzione del Dicastero).

[27] AFV, 27. Cfr. AFV, 105.

un'organizzazione a livello del bacino: serve anche una gestione in comune e verificabile delle risorse idriche spiega uno studio che ha proposto un metodo per misurare il tasso di cooperazione transfrontaliera a proposito dell'acqua, e che sostiene che due Paesi che abbiano un elevato tasso molto probabilmente non si affronteranno militarmente[28].

Al livello di una comunità rurale[29] che intraprende un foraggio: chi scava, chi fornisce le tubature, chi dovrà stabilire le tariffe, chi educare attraverso la scuola locale e i gruppi di famiglie all'uso dell'acqua, chi si occuperà della manutenzione, chi effettuerà le analisi di campioni di acqua, e via dicendo[30]. Si creano (sperabilmente) un'armonia fertile e una fiducia tra quelle persone coinvolte (la fiducia ovviamente non esclude istituzioni): si conoscono meglio gli altri, e dunque ciascuno riesce meglio a comportarsi in un determinato modo in seno alla comunità sapendo che si può aspettare che anche gli altri si comportino in un determinato modo, contribuendo alla gestione del bene comune acqua. Ciascuno fa la sua parte, in un determinato modo e periodo, a beneficio dell'insieme del gruppo[31], e ci si può aspettare un livello particolarmente elevato di *quasi-voluntary compliance* con le decisioni prese dall'istituzione che arbitra o comunque gestisce le difficoltà. Il tutto senza omettere il fatto che i vari utenti si conoscono e comunicano frequentemente tra di loro (dunque chi "bara" viene presto individuato, e se il comportamento scorretto si ripete viene sanzionato). Senza nemmeno tralasciare che si crea una logica, o razionalità "del noi"[32], soprattutto se c'è nella comunità un numero elevato di persone motivate, disposte ad impegnarsi per il bene comune acqua, sperando sì nella reciprocità ma senza farne una precondizione al proprio impegno, cioè

[28] Cfr. Strategic Foresight Group, *Water cooperation for a secure World*, Mumbay 2013, pp. 2-23. Non si pensi unicamente ai fiumi o ai laghi, difatti aumentano le collaborazioni tra Paesi vicini anche a proposito delle falde acquifere.

[29] Perché questo focus sui contesti rurali? Di solito la gestione dell'acqua in zone urbane è una responsabilità del municipio, che riceve tradizionalmente un aiuto finanziario e tecnico dal Governo (delegazione di responsabilità e di mezzi), nelle zone rurali spesso la situazione è meno chiara. Cfr. M. Camdessus *et al.*, *Eau*, Éditions Robert Laffont, Paris 2004, p. 92.

[30] Caritas Senegal è nota per aver contribuito alla realizzazione di decine di pozzi nel Paese e per aver accompagnato i comitati di gestione (costituiti da rappresentanti dei vari utenti che beneficiano di un determinato pozzo) che amministrano il singolo progetto idrico.

[31] Cfr. R. Sugden, *The Community of Advantage*, University Press, Oxford 2018, pp. 236 e 239.

[32] Cfr. A. Smerilli, "We-rationality: per una teoria non individualistica della cooperazione", «Economia Politica», 24 (2007/3), pp. 407-425.

chi agisce per motivazione, per gratuità. E così, tra chi innesca comportamenti virtuosi e chi si associa, si evita una tragedia, ossia la scomparsa della risorsa acqua. Anzi, questa viene gestita in modo durevole. Non a caso gli esperti che promuovono tecniche per il recupero dell'acqua in zone aride suggeriscono – per quanto possibile – di evitare di gestire queste situazioni essenzialmente attraverso politiche stabilite a livello nazionale, bensì di incoraggiare dinamiche partecipative ogniqualvolta vadano prese decisioni in merito a proprietà municipali o comunitarie; una questione particolarmente importante laddove le risorse idriche presenti in questi spazi comuni siano in cattivo stato[33]. Anche la raccolta di molte informazioni può essere svolta a livello comunitario[34]. Si tratta del principio di sussidiarietà[35]. Non a caso Elinor Ostrom elenca come un fattore chiave per la buona gestione di un bene comune il fatto che la comunità locale abbia il diritto di auto-organizzarsi riconosciuto dallo Stato[36], e la FAO da un decennio esorta i Governi ad armonizzare le proprie leggi e procedure considerando e rispettando le comunità locali che hanno il proprio *customary tenure system*, fattore importante poiché da questi sistemi di *tenure* dipende spesso la gestione dell'acqua[37]. Inoltre, la FAO ha dedicato studi ai diritti collettivi concernenti la gestione dell'acqua[38], e il Relatore speciale delle Nazioni Unite per il diritto all'acqua potabile e ai servizi igienici auspica che le persone e le comunità siano in grado di capire i propri diritti di partecipare sia alla stesura di leggi e regolamenti sia nella gestione delle risorse idriche, ciò suppone che – se necessario – queste persone e comunità ricevano gli strumenti per partecipare in modo efficace[39].

Tutto ciò premesso, sarebbe riprovevole omettere tre aspetti critici.

[33] Cfr. IFAD *et al.*, *Water Harvesting. Guidelines to Good Practice*, Berna 2013, p. 20.

[34] Cfr. C. de Albuquerque, *Droit au but. Bonnes pratiques de réalisation des droits à l'eau et à l'assainissement*, Lisboa 2012, p. 191.

[35] Cfr. Benedetto XVI, Enciclica *Caritas in veritate*, 47 e 57; Pontificio Consiglio della Giustizia e della Pace, *op. cit.,* pp. 185-191.

[36] Cfr. Ostrom, *op. cit.*, p. 101.

[37] Cfr. FAO, *Voluntary Guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security*, Roma 2012, pp. IV e 8.

[38] Cfr. FAO, *Unpacking water tenure for improved food security and sustainable development*, Land and Water discussion paper 15, Roma 2020, p. 10.

[39] Cfr. P. Arrojo Agudo, *Plan and vision for the mandate from 2020 to 2023*, Rapporto del Relatore speciale delle Nazioni Unite per il diritto all'acqua potabile e ai servizi igienici, A/HRC/48/50, 15, 2021.

1. Innanzitutto, la gestione comunitaria di un bene comune non sempre riesce (il saggio di Elinor Ostrom passa in rassegna anche fallimenti), e comunque spesso non è facile (per esempio può essere complicato organizzare la partecipazione di tutti[40], e capita che la partecipazione rallenti o freni i processi decisionali[41], o che non si riesca a scoraggiare comportamenti opportunistici da *free-rider*).
2. In secondo luogo, i diritti idrici di una determinata comunità, per quanto antichi possano essere e per quanto possano aver efficacemente tutelato una determinata fonte idrica, «non dovrebbero violare la solidarietà e la dignità umana»[42].
3. Infine (ed è un aspetto collegato al precedente), anche laddove una singola comunità tuteli efficacemente l'acqua disponibile localmente, spesso non è possibile considerare la comunità come se fosse un microcosmo isolato: è necessario capire come essa interagisce – e come le altre comunità vicine interagiscono – con "il tutto"[43], cioè con le comunità della zona, quelle più lontane a valle o a monte, e con i livelli superiori di coordinamento politico, amministrativo, logistico... e con l'ambiente naturale, poiché «tutto è connesso» (come ripete la *Laudato si'*).

Le risorse idriche sono da sempre una preoccupazione delle istituzioni e degli ordinamenti giuridici. Un gruppo di giudici, riuniti nel 2018 a Brasilia, ha definito l'acqua un *Public Interest Good*[44]. Difatti, la buona gestione dell'acqua potabile o per l'irrigazione o per i servizi igienici contribuisce al perseguimento del bene comune dell'intera società.

Pertanto, alla luce del principio della sussidiarietà, sono e rimarranno una necessità quelle istituzioni e consuetudini proporzionate alle sfide connesse al particolare bene comune acqua del quale la famiglia umana deve prendersi cura. La riflessione economica e gestionale deve interrogarsi su questi

[40] Come è stato osservato da alcuni studiosi, non è facile sfruttare in modo ottimale un determinato bene comune o pubblico se ci si deve avvalere della collaborazione di entità che cerchino ciascuna di massimizzare il proprio tornaconto. Cfr. W. Buchholz and T. Sandler, *Global Public Goods: A Survey*, «Journal of Economic Literature», vol. 59(2), p. 502, 2021.

[41] Cfr. Hydroaid *et al.*, *Les processus participatifs de gouvernance environnementale en Afrique : expériences locales pour des perspectives globales*, Torino 2021, p. 12.

[42] AFV, 75.

[43] Cfr. AFV, 26.

[44] Brasília Declaration of Judges on Water Justice, 8th World Water Forum Brasilia, 21 marzo 2018, primo principio.

problemi: in un determinato Paese (che sia asiatico, africano, europeo, delle Americhe…) quali meccanismi favoriranno una buona gestione dell'acqua ai vari livelli, realizzando per tutti il diritto umano all'acqua potabile e ai servizi igienici? Con quali tecnologie, quali consultazioni, quale educazione, quali stili di vita, quale trasparenza, quali costi, quali impatti sulla salute? Con quale «partecipazione solidale dei cittadini alle sorti della propria comunità»[45]? Con adeguate risposte a queste domande, la gestione dell'acqua diventa un meccanismo di pace.

In quello che viene considerato il primo testo di un Pontefice dedicato interamente alle tematiche ecologiche – il Messaggio per la Giornata Mondiale della Pace 1990 – Giovanni Paolo II insisteva proprio sulla collaborazione, sulla solidarietà e sulla responsabilità di tutti nell'ambito ecologico in relazione alla pace:

> la questione ecologica ha assunto tali dimensioni da coinvolgere la responsabilità di tutti. I vari aspetti di essa, che ho illustrato, indicano la necessità di sforzi concordati, al fine di stabilire i rispettivi doveri ed impegni dei singoli, dei popoli, degli Stati e della comunità internazionale. Ciò non solo va di pari passo con i tentativi di costruire la vera pace, ma oggettivamente li conferma e li rafforza[46].

La pace è un dono di Dio[47], ma anche una responsabilità costante di ciascuno che deve sforzarsi di stabilirla e conservarla con impegno comunitario e personale[48], essa può essere ricercata anche attorno al e a partire dal pozzo, fiume, bacino transnazionale e mare.

[45] Pontificio Consiglio della Giustizia e della Pace, *op. cit.*, 191.
[46] Giovanni Paolo II, Messaggio per la Giornata Mondiale della Pace, 15, 1990.
[47] Cfr. *Vangelo secondo Giovanni* 14,27.
[48] Cfr. Giovanni Paolo II, Messaggio per la Giornata Mondiale della Pace, 2, 1982.

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