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PUTTING A HALT TO THE ILLEGAL TRADE IN MARINE TURTLES

WWF's Marine Turtle Use and Trade Initiative (2018-2026)

Background

Hawksbill turtles (*Eretmochelys imbricata*) are well known for their beautiful shells and the essential role they play in maintaining the overall health of our coral reef ecosystems (Leon and Bjorndal, 2002). Unfortunately, declines in hawksbill turtle populations mean that they are listed as Critically Endangered internationally (IUCN Red List, 2008). Many factors are contributing to this decline but the main threat driving hawksbills towards extinction in the Asia-Pacific region is unsustainable (legal and illegal) take and trade (IOSEA, 2014; Wallace et al., 2010) (Figure 1). Recent estimates suggest that the tortoiseshell trade network, concentrated in Southeast Asia, harvested approximately nine million hawksbill turtles over 150 years, over six times previous estimates (Miller et al. 2019). The species has never properly recovered, and hawksbill populations are now at least 80% lower than historical levels (Mortimer and Donnelly 2008). We are concerned that *use* is severely reducing populations and *trade* is outstripping a rapidly diminishing supply.

The problem

Despite interventions by the Convention on International Trade in Endangered Species (CITES), the tortoiseshell (or 'bekko' in Japanese) trade is alive and intact today (CITES Secretariat, 2019). Although globally banned in 1977, new or re-emerging black markets in China, Japan, Vietnam, Taiwan and Hong Kong are again creating a high demand for tortoiseshell (bekko) products. However, the nature of the marine turtle supply chain has changed significantly, becoming more fragmented, hidden and obscure, making policy and enforcement increasingly difficult. Also, there is a growing online trade (e.g. China and Indonesia) with souvenirs from hawksbill turtle shells found on various e-commerce websites. **This illegal trade cannot be ignored any longer.**

"The critically endangered hawksbill turtle is still subject to a significant illegal trade in many countries of Southeast Asia and Polynesia (Miller et al. 2019)".

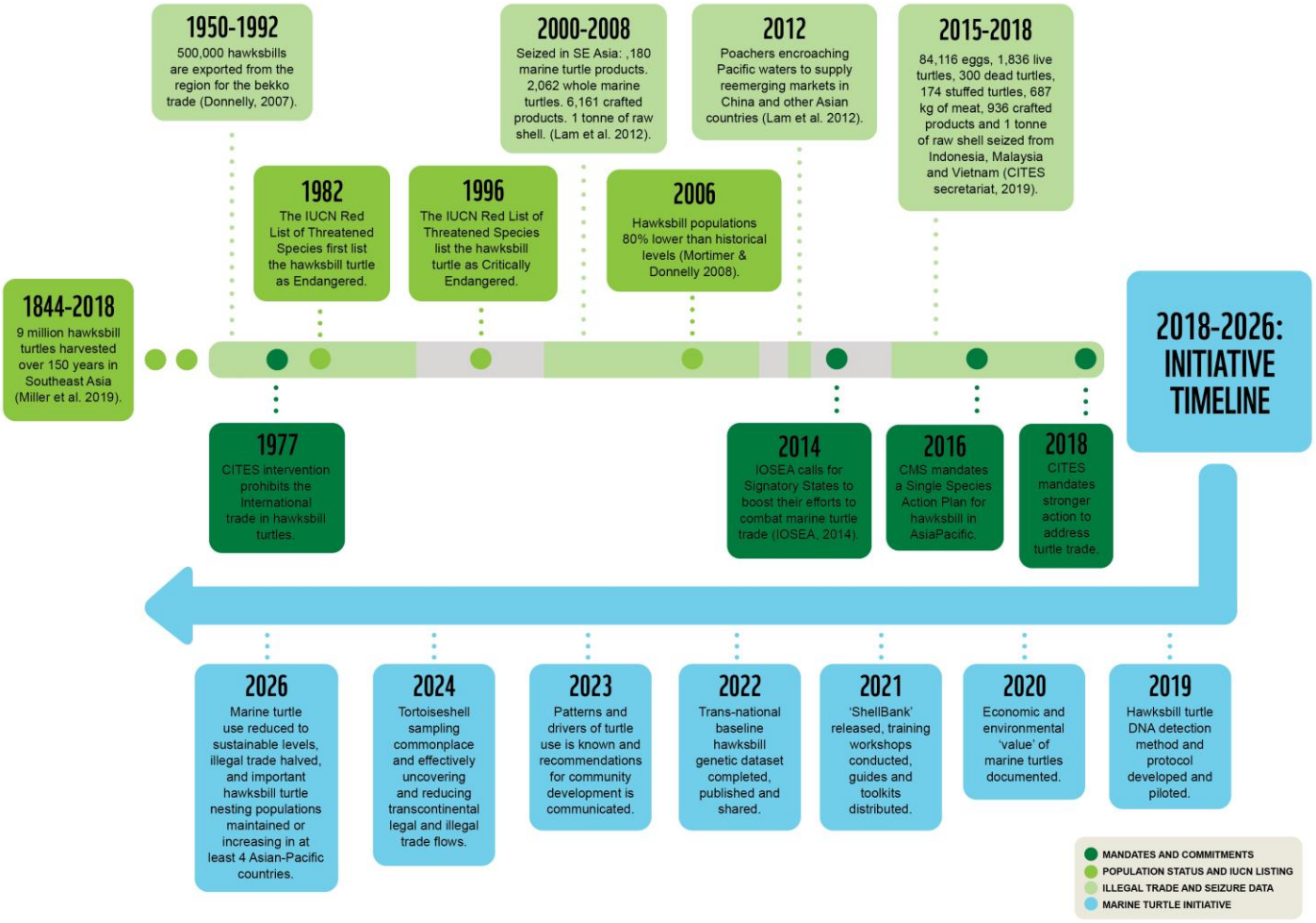


Figure 1. Summary of marine turtle trade in the Asia-Pacific region. This timeline highlights just some of the many seizures made despite early CITES interventions as well as key conservation measures being put in place to help protect hawksbill turtles. Also shown is the timeline of commitments to be delivered through the Marine Turtle Use and Trade initiative.

Our solution

"Urgent action is required to halt the demand for these critically endangered species in the Asia-Pacific region".

WWF is working towards safeguarding hawksbill turtle populations in the Asia-Pacific region, so they are no longer at risk of extinction, and no longer targeted for trade. Through our *Marine Turtle Use and Trade initiative*, our goal is to reduce the use of marine turtles to sustainable levels and halve the illegal turtle trade by 2026. This do this we must first:

1. **Uncover the transcontinental legal and illegal marine turtle trade flows between source-transit-demand countries;** and
2. **Identify the social-cultural-economic factors driving use, supply and demand**

Together with partner organisation TRAFFIC, as well as national governments, universities, local communities and other groups throughout Asia-Pacific, WWF is working to address the transboundary legal and illegal use and trade of marine turtles and their products. Through this *Marine Turtle Use and Trade initiative*, we aim to understand the link between source, transit and demand countries by

developing evidence-based forensic tools and products that we can share with conservation decision-makers and law enforcers. We also recognise that to curb the unsustainable harvest of marine turtles we must understand the specific drivers of community use and trade in order to develop appropriate alternatives. Armed with this information, we seek to support governments and help drive policy changes at the regional and national levels to enable effective collective action. Through this initiative, we will work with partners to:

Strengthen National and International Conservation Management

- Develop and distribute a training guide and toolkit to inform monitoring and enforcement;
- Spearhead and effect transboundary policy reform, harmonisation and enforcement for zero poaching.

Increase Community Awareness, Involvement and Support

- Understand baseline trends, demographics and social-cultural-economic drivers of use;
- Build community capacity for sustainable management of hawksbill turtles;
- Assess the economic and environmental value of marine turtles to drive action;
- Engage in consumer awareness campaigns and communicate project outcomes.

Build National and Local Capacity for Conservation Science

- Develop a marine turtle DNA shell detection method and protocol;
- Establish a citizen science ´*ShellBank*´ and help build a transnational genetic database;
- Provide genetics training and expert advice to build capacity in demand countries;
- Establish current market trends at marine turtle trade hotspot countries;
- Trial DNA detection methods in at least one demand country.

Partnership opportunities – calling on all Asia-Pacific countries

We invite you to collaborate and partner with us to participate in *ShellBank* and the *Turtle Use Project*. With your involvement, we will build local capacity across Asia-Pacific to apply new technologies (*ShellBank*) and better understand the complex drivers of turtle use and trade (*Turtle Use Project*). These core components of the *Marine Turtle Use and Trade initiative* are fundamental for advancing hawksbill conservation at national and regional levels, as well as enhancing your country's enforcement efforts against illegal traders. Although initially focussed on the Asia-Pacific region, *ShellBank* and the *Turtle Use Project* can be applied in other regions (e.g. Caribbean and Western Indian Ocean) where the exploitation, unsustainable use and trade also remain ongoing drivers of turtle population decline.

Core components of the Initiative

"Our goal is to support at least 4 Asia-Pacific countries to maintain or increase important hawksbill turtle nesting populations by 2026"

This WWF International Wildlife Practice Initiative is hosted and coordinated by WWF-Australia, and includes activities undertaken by many WWF offices, TRAFFIC and other affiliates in Asia-Pacific countries including (but not limited to): Malaysia, Philippines, Indonesia, Vietnam, Papua New Guinea, Solomon Islands, New Caledonia, Vanuatu, Fiji and Australia.

The *Marine turtle Use and Trade initiative* tackles the marine turtle trade and use through two main pieces of work:

Trade	***Use***
Establish *ShellBank* to help uncover the transcontinental legal and illegal marine turtle trade flows	Instigate *Turtle Use* project to help uncover the social-cultural-economic drivers of use

This complimentary approach has enabled us to develop clear objectives and actionable outcomes that are in line with nations' commitments under existing international, regional and national policy frameworks - moving towards our ambitious aim to reverse population declines and so that hawksbill turtles are no longer at risk of extinction.

ShellBank – A transnational genetic study

The illegal trade in hawksbill products ranges from domestic, small-scale operations where turtles are hunted to support local markets, to large-scale operations where turtles are harvested and trafficked (overland, shipped or airlifted) internationally (Miller et al., 2019; Gomez & Krishnasamy, 2019). The marine turtle supply chain has changed significantly and seemingly shifted from open markets to a more covert form (CITES Secretariat, 2019; Madden Hof, 2018). As a result, we need to develop and adopt new technologies to retrace turtle products from 'sale' to 'source'.

WWF is partnering with researchers, universities, NGOs and governments to develop and apply genetic tools that will identify poaching hotspots and pinpoint the hawksbill populations that are most impacted across the Asia-Pacific region.

The role of DNA *Mitochondrial (mt)DNA is maternally inherited, meaning that it is only passed down from mothers to their offspring. Accordingly, mtDNA is an ideal genetic marker for detecting population structure in nesting populations of marine turtles. Because female turtles return to their region of birth to breed and lay eggs (natal homing), there is a strong genetic similarity between turtles nesting within the same area and significant differences between regions (Jensen et al., 2013)—essentially a genetic signature for each nesting region. These genetically distinct nesting populations are also referred to as genetic stocks or Management Units (MUs). By building a comprehensive reference database of each genetic stock, we will be able to re-trace the origin of samples collected away from nesting beaches, such as foraging areas, fisheries bycatch or illegal tortoiseshell products.*

WWF is developing a reliable method to extract DNA from turtle products that can be compared against a reference database of genetic signatures from known hawksbill populations (see box above; Figure 2). This will allow us to determine the population origin of hawksbill products from 'sale to source'.

However, we do not currently have a comprehensive reference database for the Asia-Pacific region.

Through the formation of the *Hawksbill Genetic Working Group,* we are creating a network of research organisations throughout the region to identify sampling gaps and coordinate sampling of new rookeries collectively. Without this knowledge, the DNA source detection tool will not work and we will not be able to protect the most vulnerable hawksbill populations.

WWF and partners are actively addressing this challenge though WWF's *ShellBank*.

ShellBank aims to:

- Coordinate and build on the open-source transnational reference genetic database through genetic sample collection, analysis and data sharing throughout the region
- Advance knowledge of turtle product sourced, transiting or sold at transaction points through citizen science donations and surveys
- Build in-country capacity for genetic sample collection and analysis through conducting workshops and providing expert advice that can be applied to all species of marine turtles

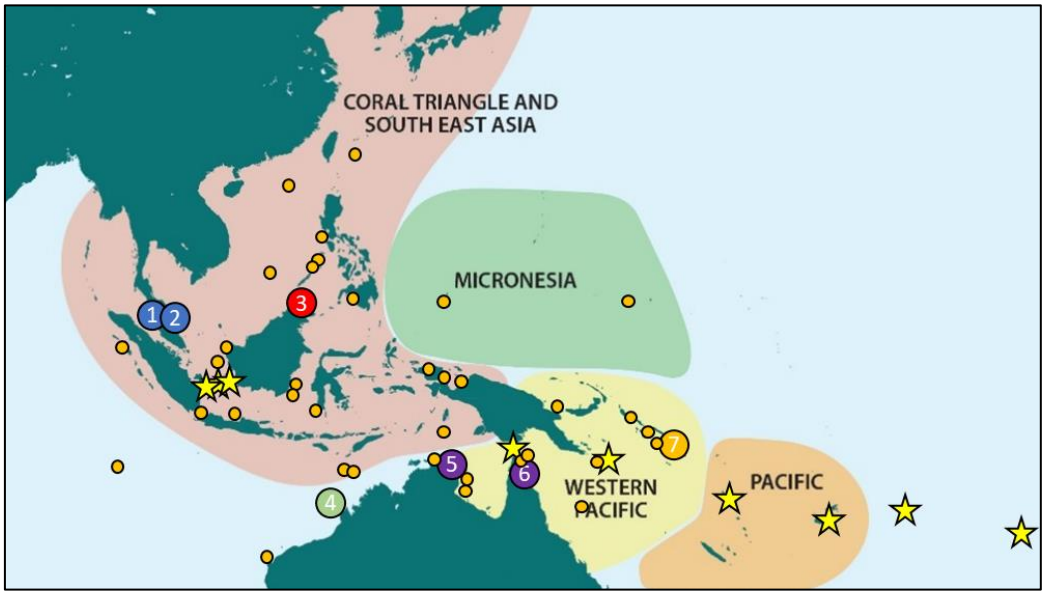
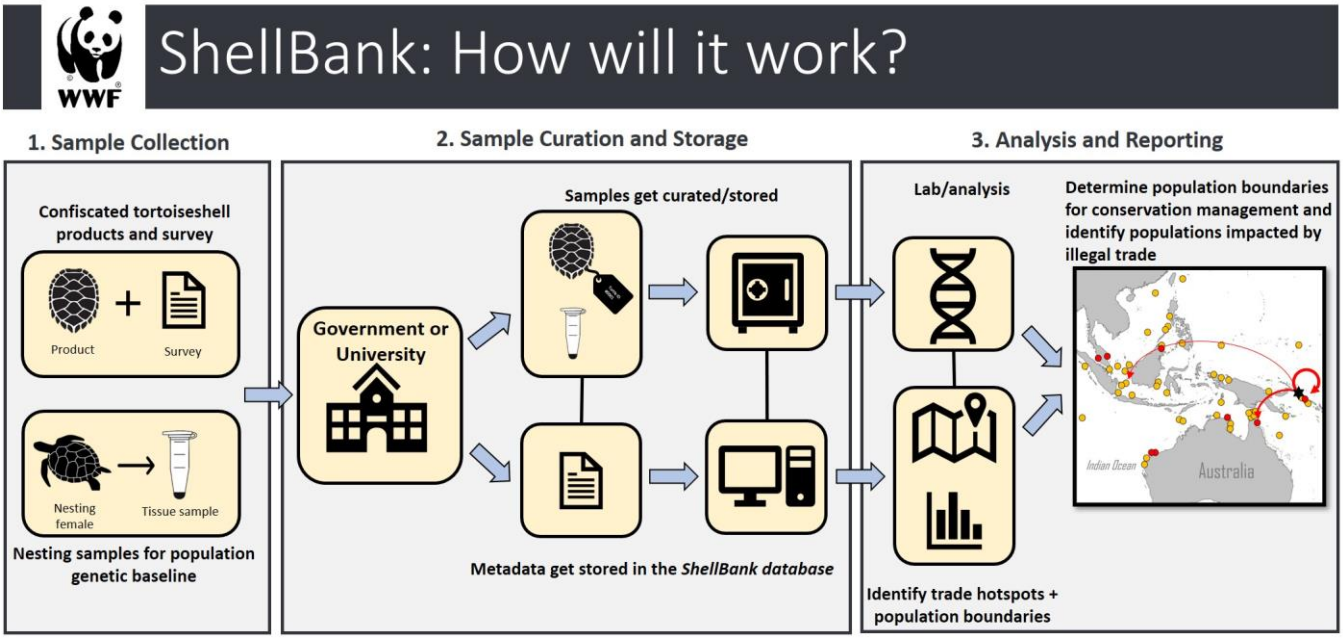


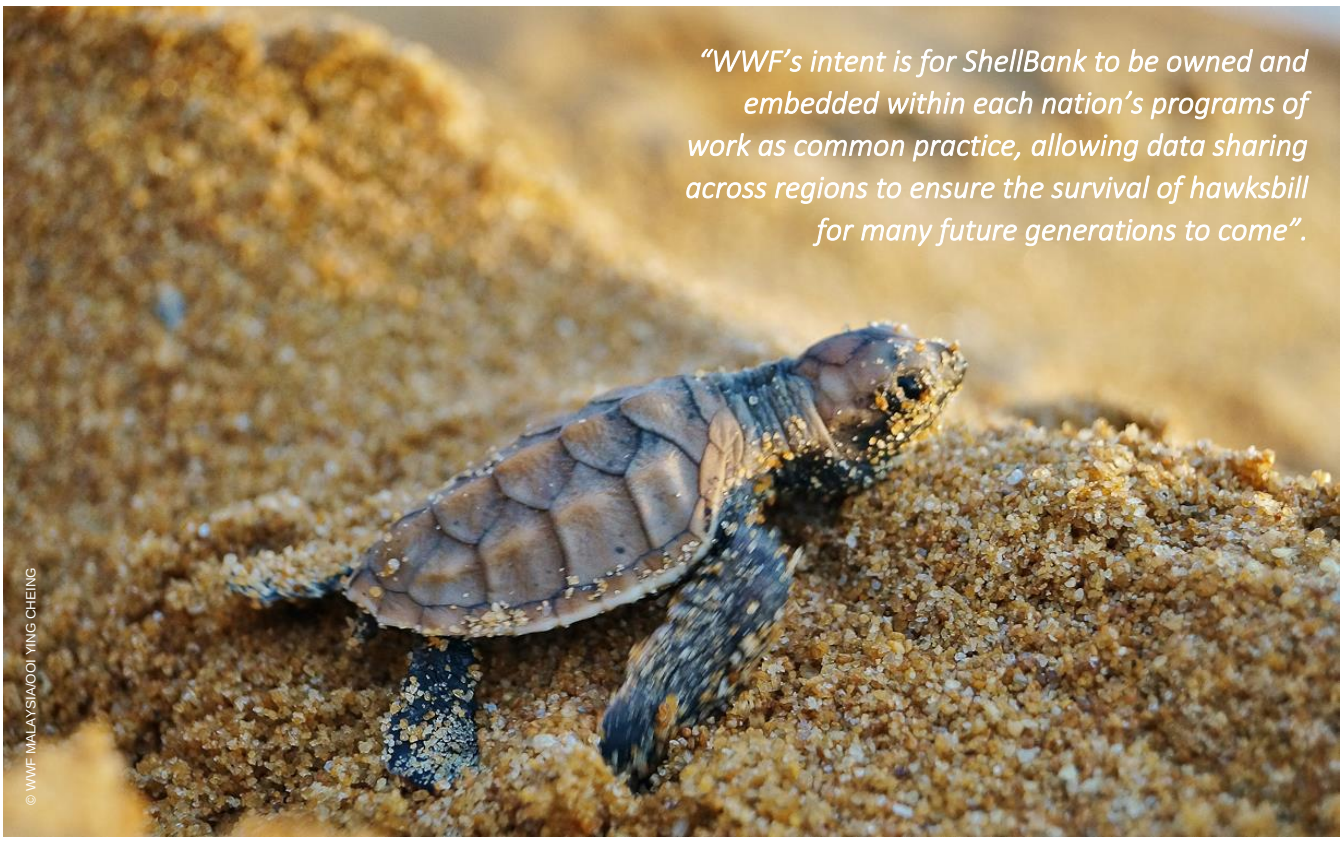
Figure 2. Map of Asia-Pacific showing known hawksbill rookeries (dots) and published genetic stocks: ***Peninsular Malaysia*** *(1. Melaka, 2. Terengganu),* ***East Malaysia*** *(3. Sulu Sea),* ***Western Australia*** *(4. Varanus and Rosemary Islands),* ***North Australia*** *(5. Groote Eylandt, 6. Milman Island) and* ***Solomon Islands*** *(7. Arnavon Islands); as well as locations of ongoing genetic sampling (stars): Papua New Guinea, Solomon Islands, Australia, Vanuatu, Fiji, American Samoa, French Polynesia, Indonesia + more to come.*

Working together

Scattered or unpublished, these efforts are already underway. Participation in *ShellBank* offers a coordinated approach – with standardised tools, guides, capacity building and funding (in priority locations and as advised by the *Hawksbill Genetic Working Group*). It also offers support and data to help deliver on national, regional and international commitments (e.g. CITES, CMS, CTI-CFF, IOSEA etc.) and responsibilities to recover the critically endangered hawksbill population.

This iniative is being supported in partnership with RCL Cruises Ltd Australia.





Turtle Use Project – Understanding social, cultural and economic drivers of turtle use

The protection of marine turtles varies throughout the Asia-Pacific region. Turtle use (legal and illegal) is commonplace in many local communities (Humber et al., 2014; Wallace et al., 2010). Turtles and their eggs have been used for many reasons over millennia. As multiple threats (such as climate change, fisheries bycatch, coastal development and marine debris) are causing many Asia-Pacific marine turtle populations to decline, the threat posed by unsustainable use and illegal trade will drive the remaining turtle populations towards extinction if allowed to persist (Gomez & Krishnasamy, 2019; Wallace et al., 2010).

Without turtles, Asia-Pacific communities will lose essential goods and services (e.g. food and products from healthy ecosystems), cultural identity and customary practice, and biodiversity for the Asia-Pacific region overall (see box at right).

Illegal trade of turtles and turtle products is fueled in part by community use. Poachers have been reported encroaching waters further and further afield to fulfil their demand (Lam et al., 2012). Facilitated by illegal, unreported and unregulated (IUU) fisheries (Riskas et al., 2018), some local communities now capture live turtles for export to foreign markets (Gomez & Krishnasamy, 2019).

Biodiversity Hotspot

Countries in the Asia-Pacific region (particularly the Coral Triangle) are home to some of the most diverse ecosystems in the world, but the Asia-Pacific region is consuming more resources than can be produced sustainably (Asian Development Bank, WWF, 2012). Biodiversity in the region is in decline in all types of ecosystems, including in forests, rivers and oceans. According to WWF, subsistence harvest (e.g. hunting of wild meat - or bushmeat - for food or to supply local markets) and domestic trade are major drivers of biodiversity loss for many species, including marine turtles (Wildlife Practice Strategy, 2018). Reflecting several Sustainable Development Goal targets (SDGs), WWF recognises that wildlife products are widely used and critical to meeting human needs, and that sustainable use regimes can alleviate poverty and support conservation. Yet we also recognise that we are amid a global poaching crisis that threatens decades of conservation work and the achievement of these SDGs.

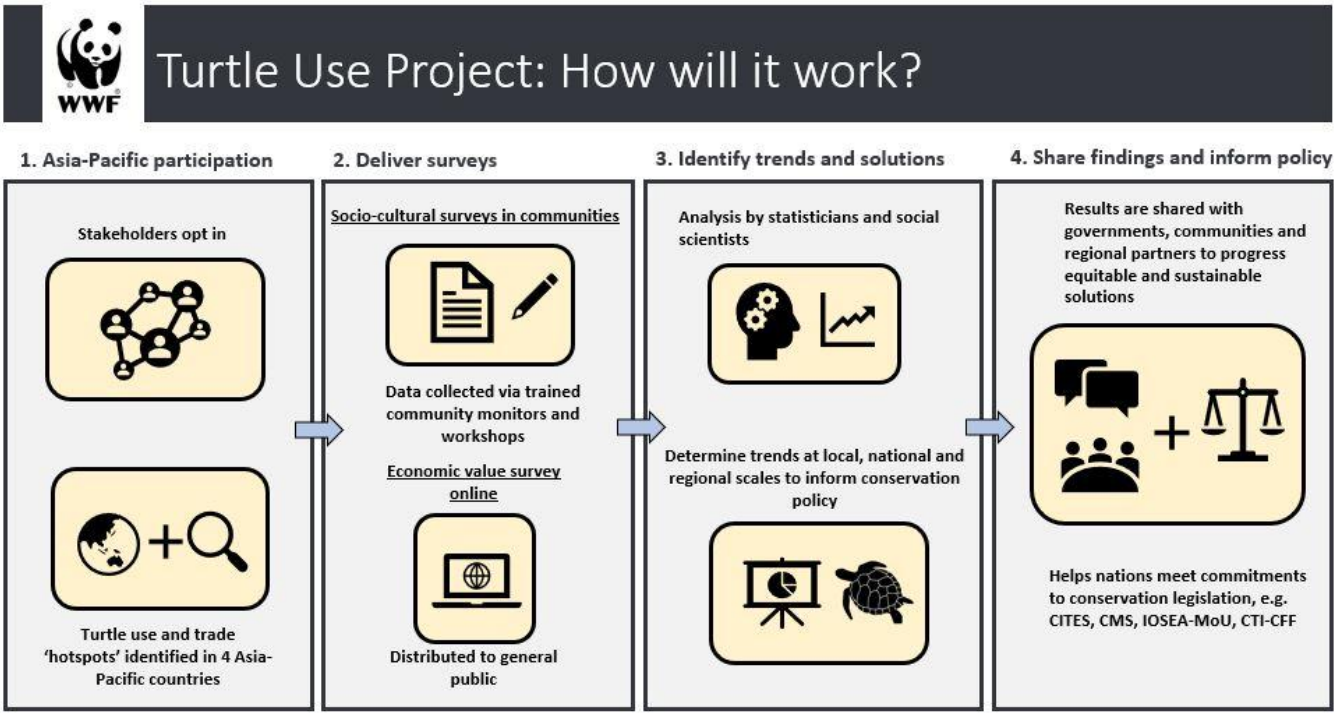
However, little is known about how many turtles are taken, why they are taken, and what is driving their use and trade. If we are to address unsustainable use and trade while supporting sustainable community development, it is important to understand the deeper motivations behind turtle use and trade. **Understanding the social-cultural-economic values** of the critically endangered hawksbill will help motivate and enable stakeholders to develop and implement effective, science-based strategies **for population recovery,** including economic alternatives or livelihood recommendations **for community development.**

We also need to understand the **Total Economic Value (TEV)** of marine turtles in the Asia-Pacific region – a *monetary* value of what turtles are worth to human wellbeing and our economy. Measuring TEV can help guide policy decisions regarding turtle use and conservation. Our work on marine turtle TEV is a crucial step in order to stimulate conservation action from decision-makers.

In collaboration with governments, universities, consultants, other not-for-profit groups and affiliates, by 2023, we aim to:

1. Create networks of community monitors and train them to collect turtle use and trade data (using a standardized survey) on-the-ground in at least four Asia-Pacific countries;
2. Define the economic value of turtles and public willingness to fund conservation via a region-wide, online survey;

3. Generate baseline data and trends of turtle use and trade that can be compared across the region; and
4. Provide policymakers with evidence-based recommendations to reduce hawksbill use and trade while fostering sustainable community development.



Working together

As part of the WWF International Wildlife Practice Initiative we have already led the establishment of a broadly-applicable (and scalable) community turtle use survey and worked with consultants to develop an economic use survey – all now ready for distribution. With your support we will be able to:

1. Distribute the economic valuation survey and/or undertake a case study in a specific location;
2. Build capacity and involvement (through training and employment) of local members to undertake community-based turtle use and trade surveys.

Not only can this data help your nation understand how domestic use is propelling illegal trade, but give you the knowledge of the '*what*, *why*, *when* and *how*' of turtle exploitation and potential solutions for community development and conservation. It also offers support and data to help deliver on national, regional and international commitments and responsibilities (e.g. CITES, CMS, CTI-CFF, IOSEA etc.) to recover the critically endangered hawksbill population.

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