



AWASUKA

आवासुका - आवास सुधार कार्यक्रम

2023
SMOKELESS KITCHENS
& HERITAGE PROJECT



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Awasuka, after the Nepali words: Aawaas Sudhar Karyakram, means Habitat Improvement Program. It promotes safe and healthy homes in the rural remote areas of Nepal.

2023 SMOKELESS KITCHENS & HERITAGE PROJECT

Highlights. 2023 has been a productive year; on one hand Awasuka Program has manufactured and installed **170 smokeless kitchens** in remote rural areas, out of which 50 of them were **funded from Nepal**; on the other hand, the program has done some significant progress on the **Heritage Project**.



The joy of having a new CHS (Chimney-Hood-Stove) at home.

1. ADMINISTRATION

In 2023, for the first time in our program’s history, we have managed to acquire funds from Nepal itself, in order to install 50 CHS units. Moreover, the program has also focused on looking for international funds in order to extend its reach.

1. Financial Statements

The finances’ control has kept on being done by Raquel Masferrer, already collaborating with us for 3 years, as a volunteer, taking care of Nepal’s accountancy and Ruping Yuan, who has been working with us for 2 years now, has kept on being responsible for Barcelona’s accountancy. Thanks to their work we’ve been able to prepare our forecast for 2024, after the financial statement of 2023:

Barcelona balance

Donations 2023	14.087,30 €
Remaining from 2022	8.927,30 €
<hr/>	
Total funds for 2023	23.014,60 €
Transferred to Nepal	- 13.000,00 €
Expenses in BCN	- 818,00 €
<hr/>	
Remaining in BCN at the end of 2023	9.196,60 €

Nepal balance		<i>(Exchange Rate: 143 – 2023 Average)</i>	
Transfers from Barcelona	1.850.771,20 NPR	12.942,46 €	
Interests' Income	7.603,95 NPR	53.17 €	
Donations from Nepal	667.850,00 NPR	4.670,28 €	
Remaining from 2022	1.167.360,00 NPR	8.163,36 €	
Total funds for 2023	3.693.585,15 NPR	25.829,27 €	
Local Manager & Office Expenses (*)	503.374,00 NPR	3.520,10 €	
CHS paid in 2023 (**)	2.776.250,00 NPR	19.414,34 €	
Total Expenses in Nepal	3.279.624,00 NPR	22.934,43 €	
Remaining in Nepal at the end of 2023	413.961,15 NPR	2.894,83 €	

() In 2023 the local manager's salary was full throughout the year, as he had finished paying his credit back to Awasuka. We must take into account that this year the local manager's tasks have been increased with two more topics apart from the CHS management and supervision: he has been supporting two research projects (health surveys and sensors' projects) and has also been giving support to the Heritage project (students and professors that have visited Bhimpheedi academically).*

*(**) Please note that the 120 CHS units paid in 2023 correspond to the 2022 batch. And 50 CHS extra units have been installed thanks to Nepal's funds. All together, it adds up 170CHS units in 2023. All CHS were paid after the Awasuka verification process, a necessary step to ensure the correct operation of the CHSs and to approve the corresponding payments.*

2. Yearly Forecast

After 2023 calculations along with field work analysis, we confirm last year's conclusions that our program can cover an average of **360 CHS per year**, which means the annual cost for the CHSs is equal to 36.000 EUR, plus 5.000 EUR for local management and office expenses. Hence, the smokeless kitchen project in Nepal costs **41.000 EUR yearly**. The program's overhead is not included in this amount (the Program Director's salary & monitoring trips expenses to Nepal) and the latter ones having been mostly covered by CCD-UPC University in 2023.

3. Conclusion

Following last year's resolution on finding more secure ways to finance the program and concentrating in only one or two single funding sources, the program has been applying for a Rotary International Global Grant during 2023, which will hopefully be received by the beginning of 2024. If the funds are granted, 250 extra CHS units will be able to be installed in other remote areas of Nepal. No other sources have been approached for the moment, but we keep on working to be able to find ways to cover the program's overhead.



Awasuka Team. Left: Lunch at Barcelona, from left to right: Marc Crespo (website maps), Raquel Masferrer (Nepal Accountancy), Monica Sans (Program Director), Beatriz Cubells (Cad Drawings) & Maria (new designer). Center: Dalbhat, typical Nepalese food. Right: Ruping Yuan (BCN Accountancy) attending virtual meetings from Sweden.

2. FIELD WORK

The installation rate monitoring started in May 2022 has continued to be performed in our installations. The work has been done with the same manufacturer and many improvements have happened since that date.

Field work in rural areas of Nepal is extremely challenging: all sorts of issues come up unexpectedly and have to be micromanaged from the site. Our local manager Hareram Pudassaini and our manufacturer Sunil Gautam are very well coordinated in this regard, and have done many improvements in the process, along with the Rotaractors' team (phone verifiers) and the Program Director, Monica Sans.

1. CHS: the reasons behind this name

Our smokeless kitchens are far more than just a chimney, as many people refer to them. They are composed of three important parts: the Chimney itself, an inner Hood and an improved Stove, and it is only the combination of these 3 elements that provides a smokeless safe environment inside the house. That's why from 2022 onwards they are called CHS, which stands for Chimney-Hood-Stove; this name represents the project much better.

2. Innovative Quality Control within the installation process

The fieldwork process is organized and digitized from beginning to end: from the awareness meetings, then the demand lists, the installations, the **location approval**, the visual verifications and the phone verifications (satisfaction surveys). Photos of each and every beneficiary are collected before and after the CHS installation, so that the right location of a CHS within the household is ensured for its right operation. The location approval step has been implemented during 2023 after many conversations with the local manager and the manufacturer during the verification process. Thanks to this step, once the verifications are done, all the avoidable installation flaws do not appear anymore. This step is better explained in section number 4: *"Impact Measurement & Monitoring"*.

The forms in English and Nepali have been used this year as well, with information regarding the CHS maintenance tasks and the manufacturer's contact number, in case any problems arise. All this has been done thanks to the insights and suggestions collected by the whole team: the local manager, the manufacturer, the phone verifiers (Rotaracts), the visual verifier and the program director.



Some installation flaws detected thanks to visual verifications. Currently they are avoided thanks to the **location approval** step.

3. Manufacturer/Installer

We are continuing with the same manufacturer/installer we signed an agreement with in May 2022. Our first agreement to install a batch of 300 CHS units was completed in mid 2023, in two different municipalities: Bakaiya (200+) and Bhimphedi (100+). After that, 50 extra CHS units were installed out of the initial agreement.

4. CHS Completed in 2023

In 2023, **170 CHS** units have been completed and verified. They will benefit around **935 people**, as the average in this rural area is 5,5 people/house. The local people employed were: 4 field workers, 1 metal worker at the workshop and 1 contractor handling the whole process. Out of these 170 CHS, 55 units have been totally covered as they were vulnerable families who could not afford the 10% beneficiaries'

contribution (1,500 Nepalese Rupees). From the 170 CHS units, 50 have been funded from Nepal: this is the first time ever in the history of Awasuka.

5. Installation Rate

The installation of the 300 CHS units batch concluded in February 2023: a total of 120 units were completed in the beginning of 2023. The installation rate has continued to be monitored since June 2022; it has yielded an exact average of 30 CHS per month, as 300 units have been completed within 10 months. Bearing in mind that these 10 months include 3 low working months (July-August and October-November), it means that the 300 CHS have actually been completed in 7 months, which would mean an average of 43 CHS per month.



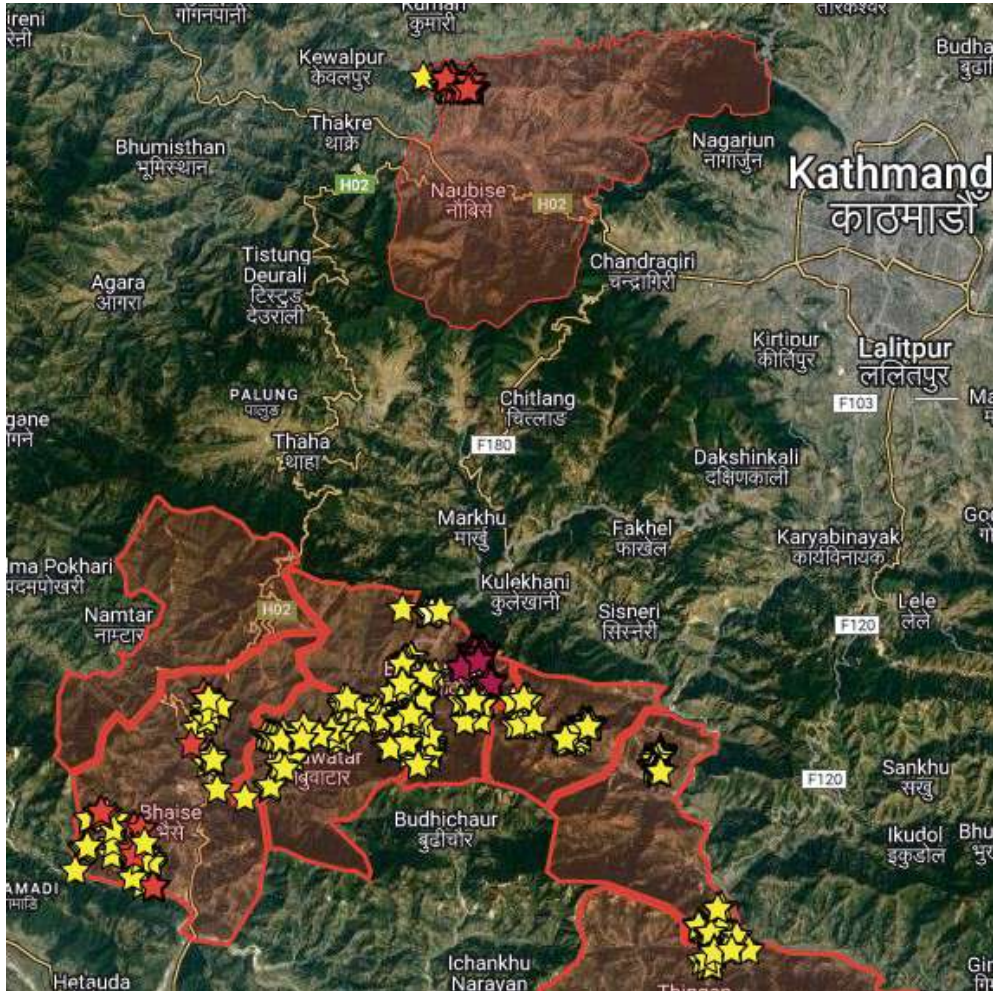
The CHS installation rate graph shows the 300 CHS unit batch started in June 2022 and completed in February 2023. After that 50 extra CHS units were added in July 2023. Total CHS units installed by the program: 750.

Working in rural remote areas is challenging: moving from one area to another and reorganizing logistics takes time. Furthermore, this year the funds were finished after the 300 batch, and while, as can be seen in the following monthly summary:

- **January & February:** full working months in the area of Bakaiya, a distant area from Bhimphedi where we have been working since June 2022. The installation has been challenging and there have been several installation issues, but it all gets successfully completed in the end.
- **March:** moving the logistics from Bakaiya to Bhaise: new workshop set up and manufacture. Some adjustments and corrections are performed to a few units that showed some flaws during the verification process.
- **April:** full working month in Bhaise: 50 units are installed and completed. The “location approval” step is applied for the first time yielding wonderful results: all CHS turned out correct during the visual verifications, no final corrections were needed. A charity event (first of its kind) is performed in Kathmandu to raise funds for 50 extra CHS in Dhunebeshi area.
- **May:** waiting for the funds to be collected from the different contributors on the charity event in Kathmandu.
- **June:** preparation for the new extra 50 units in Dhunebeshi: first installments for the new units, meetings with the ward persons, awareness meetings organization, demand list preparation and manufacture.
- **July:** Installation of the 50 CHS units in Dhunebeshi. The “location approval” step is implemented for the second time with successful results: not a single CHS needs to be corrected after the visual verifications.
- **August:** Verifications are finished and second installments are approved to be released.
- **September:** Pending installments of the last CHS batches are released.
- **October-November:** Dashain and Tihar holidays are happening in the whole country; during this period very little work is performed in Nepal, as well as by our manufacturers.
- **December:** preparation and manufacture of the 10 CHS units for the sensors’ houses, which will be installed in January.

6 Website Map

The geolocation of the installed CHS is available on our website. At the end of 2023, we completed **750** CHS total, since the beginning of our smokeless kitchen project back in 2019. The pandemic years of 2020 and 2021 were not very productive, but in 2022 the project regained momentum. From 2023 our map is being updated by **Marc Torres Crespo**, a Geoinformation and Geomatics Engineer who had been an Awasuka volunteer in the past, in Bhimphedi.



The CHS map from 2019 up to 2023, with the total CHS installed at the end of 2023: **750 units**.
The map has been updated by Marc Crespo Torres.

3. FUNDRAISING

1. El Camí de la Solidaritat.

El Camí de la Solidaritat, our partner since 2020, this year has raised the following funds for the program through different strategies: 3.000Eur through Ajuntament de Cambrils, 325Eur through CCD-UPC and 2.500Eur through the El Camí's corporate partners. Additionally, El Camí de la Solidaritat also started a different fundraising initiative consisting on a very special T-SHIRT design: the "Breathe Again" t-shirt. It can be purchased online. If you'd like to contribute to the cause while you're reading this report, here's the link for the t-shirt: <https://www.indiegogo.com/projects/sustainable-t-shirts-for-a-better-future#/>



“BREATHE AGAIN” T-Shirt that can be purchased online and the revenues go to the smokeless kitchens project.

2. CCD Application for 2023, UPC University. March 2023.

Awasuka has been benefiting from these university grants since 2015, which help cover the university members’ travel expenses. The program applied for the Spring and Fall trips 2023 expenses and the resolution was positive. Total amount approved for this call: 6.000 EUR. The benefitted persons for this application have been: 4 students, 1 professor (Montserrat Bosch) and 1 alumni (Monica Sans). The justification of this grant will be done on February-March 2024.

3. Rotary Club Cambrils & other Catalonia Clubs. September-December 2023.

RC Cambrils, along with Awasuka Program and El Camí de la Solidaritat, have submitted a Global Grant Application, having committed over \$30.000 from different sources. The Grant is under the approval process at the moment and the participating Clubs and individuals have already committed their donations for 2024: RC Cambrils (\$1.500), RC Kantipur (\$5.000), 2202 District (\$4.800), 3292 District (\$3.000), RC Boothbay Harbor (\$2.000), RC Bilbao (\$300), Ruping Yuan (\$200), 7780 District (\$2.000), Salico Kathmandu (\$3.500), RC Horizon-Talamantes (\$300), RC Vic-Osona (\$600), RC Costa Brava (\$300), RC Barcelona (\$500), RC Santander-Sardinero (\$300) and the World Fund match (\$7.840). Once the approval is hopefully passed, the funds will be sent directly in Nepal’s Host Club’s bank account (Rotary Club Kantipur), in the beginning of 2024. However, El Camí’s corporate partners (2.500Eur) donation has already been counted on the 2023 donations.

4. Individual Donors & different Organizations

The individual donors of this year have been: Juanjo Rodriguez with 44Eur, Montse Soler with 10Eur, Montse Duran with 500Eur, Rosa Fernández with 100Eur, Núria Marimon with 100Eur and Monika Hassa with 100Eur. The donor organizations of this year have been: Base-A with 3.520Eur and HPC Iberica with 2.500Eur.

5. Charity Event in Kathmandu at *The Royal Palace* (April 12th 2023)

Monica and Purna Sakya initiated an idea to create a Charity Event to be able to install 50CHS in a new area of Nepal. The idea started being developed in February and finally crystallized in April. Three Rotary Clubs collaborated on the organization tasks and on the fundraising: **RC Kantipur**, **RC Himalayan Golfers** and **RC Metro City**, as well as the **Rotaract Kantipur**, the **Support Nepal Foundation** and the **Sharada Huttaram Baidya Foundation**. The artists involved in the show were: The Jung Trio (musicians), Monnie (Monica’s stage name as a singer), Aziza (fashion show), Bhimphedi Guys (dancers) and some more sponsors like Budweiser, Old Durbar, Shree Balaji Diamond and Om Shree Jewellers. The whole show raised a total funding of: 4.600Eur, received directly in Nepal, for the 50 extra CHS in Dhunebesi.

6. Charity Event in Barcelona at *La Patronal de Sant Quirze* (June 2nd 2023)

Ateneu del Món, a charitable association and longtime collaborator of the Awasuka Program, and Ajuntament de Sant Quirze (St Quirze municipality) organized a charity concert to raise funds for the project: they facilitated the venue, the sound technicians and the online ticket selling service. The artists were “Monnie & The Awesome Boys”, Monica’s trio, and they played songs in different languages including Nepalese and also some images of the project. The smokeless kitchens and their beneficiaries were projected on the stage’s background. The total amount raised by the event was 1.000Eur.



The two Charity events in Kathmandu and Barcelona, to raise funds for the Smokeless Kitchens project.

7. Awasuka Charity Trips: Tarannà Travel & Sacred Himalaya

Back in 2019, TARANNA travel agency had added Bhimpheedi as a one-day destination in their trip to Nepal. The visit's goal was to see the CHS beneficiaries and visit Bhimpheedi as an important Heritage site in the past. The trip was supposed to start operating in 2020 but it was cancelled due to the coronavirus pandemic. Eventually, the trip was finally booked by a group of travelers in summer 2023 and 10 people visited Bhimpheedi. The travelers were happy to see Awasuka's projects and the Bhimpheedi heritage. The outcome of this trip was a 300Eur donation from Taranna, to support the smokeless kitchens project. On the other hand, the two trips created last year by Sacred Himalaya and El Camí de la Solidaritat, has been advertised in both Awasuka and El Camí's websites and social networks; however, no travelers joined the trips yet, it will probably take some time to take off. There are two different trips: a cultural tour and a mountain trekking, both stopping in Bhimpheedi to see the CHS beneficiaries. We hope next year this will be an income generating activity for the project.



Left: Monica visiting FVF in Anantapur, with the goal of networking to seek for financial support. Right: In Kathmandu, after the India trip, meeting Bimal Lal Shresta, director of an FVF funded NGO from Nepal.

In order to increase the fundraising initiatives, the following activities were undertaken:

8. Mentorship: ESADE GIVING BACK Program, January-June 2023.

Guided by Ruping Yuan, the Awasuka Program applied for this advisory program to obtain mentoring and coaching from the ESADE SOCIAL ALUMNI. After a long selection process amongst other NGOs, the Awasuka Program was finally selected. Then, the volunteer's selection was started and the chosen ones

were assigned to Awasuka. The mentoring/advising process started in January through bi-weekly meetings with two teams: marketing and fundraising. Finally the two teams delivered their conclusions in a final document in July 2023. The outcomes of their work are interesting and are now being digested and analyzed by the Awasuka Program Director and Ruping Yuan.

9. Mentorship: Nick Jesset, July-December 2023.

Thanks to Ruping Yuan’s advice, Monica is having weekly meetings with Nick Jesset, an Executive coach specialized in both Board and individual development. The main objective of this mentorship is to achieve better funding and marketing strategies.

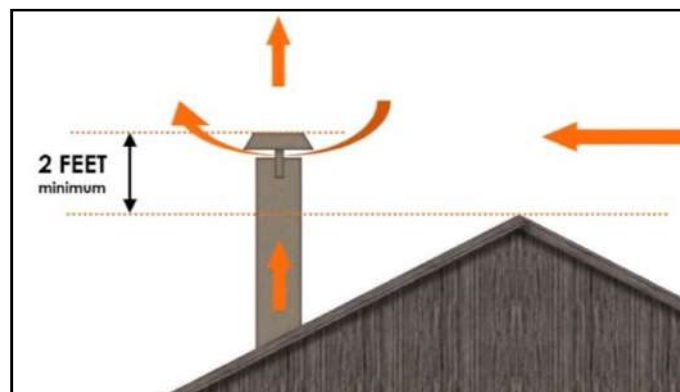
10. Visit: Fundació Vicens Ferrer – Rural Development Trust, Anantapur -India. April 2023.

After a first contact in fall 2022 and following the advice of FVF Barcelona Coordinator, Monica traveled to Anantapur in April 2023. She visited their rural projects and had meetings with relevant people from the NGO, including Mrs. Anna Ferrer, FVF-RDT’s CEO. The Awasuka Program was presented several times to different staff members of FVF-RDT (Rural Development Trust); most of them were surprised of how backward the rural areas of Nepal are compared to those of India. Monica was then introduced to two Nepalese organizations working on Special Education funded by FVF-RDT, in order to create bonds for potential future collaborations. Once back to Kathmandu, Monica met the director of one of those NGO’s: Bimal Lal Shrestha; they had a very special connection due to the fact that he had spent his childhood in Bhimphedi.

4. IMPACT MEASUREMENT & MONITORING

1. New step for better Quality Control: Location Approval

As mentioned earlier, this step has been added to the whole process - which had already been greatly improved in 2022. The importance of the **location approval** step is that it is performed prior to the CHS installation. In order to provide a suitable location for a CHS within a house layout, certain rules need to be observed to ensure that the chimney pipe will always be higher than the ridge beam – or than any other surrounding houses’ roofs. To assure this end, only certain locations of the house plan are convenient, as certain conditions need to be regarded: the roof inclination and orientation, the presence of attached rooms or not, the eaves and the number of storeys. Hence, this decision is quite a technical one: it couldn’t be left to the beneficiaries only, with neither prior knowledge nor experience. Wrong decisions caused installation flaws that were detected in the verifications and had to be perfected and adjusted later. As a result, the post-installation process consumed too much time and was not efficient enough. That being the case, it was decided that the local manager, in possession of prior experience and technical knowledge, would be the right person to propose two or three suitable place choices to the beneficiaries, and it was their call to accept it or not. In case they didn’t accept it, the CHS would go to another beneficiary. Initially, this new step caused a bit of a stir among the beneficiaries, but now they are used to it, they understand it and the whole process works much better than before. bottom line, Awasuka cannot afford to commit installation flaws due to wrong CHS locations, that's why this step is so important and from now on it is communicated and observed by all the involved.



This is the most important rule any chimney needs to comply with to ensure efficient suction from inside to outside.

2. Monitoring trips to Bhimphedi, Nepal. Spring & Fall 2023.

After 2022's one-month trip in Spring, 2023 has seen a greater presence of Awasuka collaborators in the field. The Program Director stayed 3 months in Spring and 2 months in Fall, the UPC Professor Montserrat Bosch stayed 1 month in Spring, and four UPC bachelor students stayed approximately two months each, in order to do their thesis on the smokeless kitchens and the heritage project.

The program director, along with the UPC professor and two students visited the CHS installation in the remote area of Bhaise, where only people from the Chepang ethnic group live (a very vulnerable cast). They had the chance to see how the smokeless kitchens project has changed their daily lives.

The Program Director was working closely with the local manager and the CHS manufacturer to monitor and improve the CHS installation process, updating the House Forms, revising the awareness sessions. Moreover, Monica Sans was also attending meetings with different stake-holders, giving awareness talks in different events, attending the Rotary District Conference in Kathmandu and organizing a Charity event to raise funds for 50 extra CHS, adding up to the 2022 batch (300 CHS).

Two Rotaractors joined the team in Spring: Sadikshya Banjade and Selina Adikhari, visiting several CHS and the office. They attended meetings with the local manager and the manufacturer, in order to improve the phone-verification process. The Nepalese youth living in urban environments are always surprised by the rural life-style of their own country: they usually create links with the local communities and are interested in getting to know them better, and by doing so, increasing their global awareness.



Field trip to Bhaise by Awasuka and members of UPC University. Right, one of the UPC students working on the Heritage Project.

3. Scientific Research on Indoor Air Quality and Health. Fall-Winter 2023 - Spring 2024.

Political and social advocacy project. Evaluation of improvements in children's and women's health in rural Nepal associated with the use of optimized kitchens. Participants:

Awasuka Program <https://awasuka.org>

Development Cooperation Center - UPC <https://ccd.upc.edu/ca>

Research groups:

Pediatric Environmental Health Unit <https://www.pehsu.cat/>

B2SLab - Bioinformatics and Biomedical Signals Laboratory <http://b2slab.upc.edu/>

BIOCOMSC-Computational Biology and Complex Systems <http://biocomsc.upc.edu/>

iLIKA – Keizo Asami Institute (Pernambuco, Brazil) <https://www.likainstitute.org/>

The beginnings.

In October 2022, at an Awasuka exhibition, Monica Sans was presenting the social, economic and environmental benefits of the smokeless kitchens project. When she talked about CO₂ emissions' reduction, one of the attendants gave some feedback on the topic and they decided to meet later. The attendant was PhD. Daniel Lopez-Codina, director of research projects at BIOCMMSC-UPC. Monica and him had a very interesting conversation about the CO₂ emissions calculation. One of the statements was: firewood is a renewable energy and hence, the CO₂ emissions reduction can't be considered as such – this is because firewood's life cycle itself is circular and doesn't cause any CO₂ alterations in the environment (although this is only true if the forest mass is maintained -or grows- over time). The other statement was: the smokeless kitchens project calculates the CO₂ emissions reduction after the 40%

firewood savings of the improved kitchens (after the field tests and literature by Practical Action). Being these two statements certain, Monica and Daniel didn't draw a specific conclusion about the topic. Months later, in May 2023, Monica was writing a funding application form and she came back to the topic. She called Daniel for some help and, after 2-3 days, Daniel called Monica and told her: *"I have been thinking about this and have finally decided that we need to do a serious research about CO2 for this project: I will involve two multidisciplinary research teams from UPC University, not only for CO2 calculations, but also for health"*. Monica was incredibly amazed to hear these news and felt truly privileged and grateful to be able to have such quality research for the smokeless kitchens project, which will be able to back up and measure the true impact of the improved stoves with a chimney-hood.



One of the multidisciplinary team's virtual meeting. Left to right, Upper row: Jordi Fonollosa, Daniel López-Codina, Mario Bravo, Ferran Campillo; Lower row: David Ferrandiz, Carles Turró, Clara Prats & Monica Sans.

The members of the multidisciplinary team.

The individuals from the different teams include: PhD. Daniel Lopez Codina, PhD Clara Prats and Mario Bravo (BIOCOMMSC), PhD. Jordi Fonollosa (B2SLab), PhD. Ferran Campillo (PEHSU), PhD. Jones Albuquerque (iLIKA), PhD. David Ferrandiz, Carles Turró and Monica Sans (Awasuka). The teams started meeting on April-May 2023 and started planning the strategy for the sensors' purchase and installation, as well as the preparation of the health surveys.

Some of the team members managed to visit Nepal, the first one was **David Ferrandiz**, a pharmacist and former Awasuka health volunteer in Nepal, holding a PhD on Epidemiology (NYCU, Taiwan) and currently working as an Executive Health Director at CatSalut (Catalan Health Service). In August 2023 he visited Awasuka office in Bhimphedi, the improved kitchens with chimneys and met the Awasuka staff.



PhD David Ferrandiz visit to Bhimphedi, with Hareram Pudassaini (Awasuka) and Subina Tuladhar (Heritage Project)

The second member to visit the site was **Jordi Fonollosa**, specialized in research projects to improve health using sensors. Despite his hectic schedule, he managed to visit Kathmandu (the capital) and Bhimphedi (rural area) in less than 5 days: a record in Awasuka's history. Jordi gave a lecture on his projects with sensors at Rotary Club of Kantipur (Awasuka Program's partner in Nepal), which you can watch here: <https://www.youtube.com/watch?v=dKiwy967aug>. He also visited the selected houses for the sensors and gave installation directions on the most appropriate location for their best performance.



Jordi Fonollosa's visit to Nepal. Left: at Boudanath Stupa, Kathmandu. Center: At one of Bhimphedi's houses selected for the project, pointing at the right location for the sensor. Right: at Bhimphedi rural areas.

The third member to visit the site was **Mario Bravo**, a biostatitian specialized in data analysis. During his personal trip to Asia, he traveled to Nepal to visit the rural areas and experience the problem of indoor air pollution firsthand. His visit was also very helpful on the technical side of the survey preparation: the Mobile App selection and the questionnaires' introduction. For that he was in coordination with Monica Sans for the verified translations (adapted to the rural environment) and with David Ferrándiz and Ferran Campillo, who supervised the questionnaires from Barcelona. Once the questionnaire was ready, Mario accompanied Hareram (Awasuka staff) to test the survey in the remote rural areas. After Mario's departure, he has kept in touch with David and Hareram to verify that all data were correctly collected and stored in the App.



Mario Bravo's visit to Bhimphedi, Nepal. Left: at the road before going to the rural remote areas with Harearm Pudassaini (local manager). Right: at Awasuka Office during a visit from Rotary Club Kantipur member Arun Pokharel.

Last but not least, the fourth member of the team to visit Nepal was **Carles Turró**, computer scientist and longtime Awasuka IT, currently working at CAR (High Performance Sports Center, Catalonia) is also our ideal handyman, able to set up and install the sensors and mifi devices in the challenging Nepalese rural environments. Carles has been to remote rural areas several times and knows how to deal with the flaws of the electricity connections, electrical equipment, etc... After analyzing all possible solutions, he decided to carry European style plugs to be installed by local electricians, and coordinating the whole operation with Hareram Pudassaini, Awasuka local staff.



Left: Packaged sensors as they arrived to Bhimphedi. Center: sensors & mifis ready to be set up. Right: backpacks loaded with all the equipment ready to start the motorbike trip to rural areas, for the installation in the selected houses.



The sensors while being installed at the 10 selected houses, along with the mifi devices, respective chargers and European style plugs carried from Barcelona. The beneficiaries listen to the explanations of the local manager.

The remote team members include: Daniel Lopez, Clara Prats, Ferran Campillo and Jones Albuquerque. **Daniel Lopez Codina** and **Clara Prats** are both Physics and members of BIOCOSM-UPC, specialized in computational models for the study of infectious diseases and epidemiological models; the two of them appear frequently at the Catalan media (TV, radio...) as epidemiology experts. **Ferran Campillo**, an environmental pediatrician in charge of one of the few Pediatric Environmental Health Units in Catalonia; they analyze environmental risk factors that can affect children's health, such as air pollution. **Jones Albuquerque** is a Brazilian computer scientist who collaborates with Brazilian and Catalan universities, participating in research projects about immunopathology, epidemiology and other health related topics. The four of them haven't travelled to Nepal yet, but from Awasuka we hope they'll be able to visit the project soon, as well as having the chance to experience the welcoming nature and human warmth of the Nepalese people firsthand.

The goal of the scientific research project.

Awasuka's smokeless kitchens improve air quality and reduce firewood consumption; the aim of this project is to objectively assess the improvement in air quality and health, especially focusing on children and women. Carrying out an objective evaluation of the improvements will contribute to increase political advocacy to encourage the use of improved smokeless kitchens in rural areas of Nepal.

To achieve this, Awasuka program counts on the support of the aforementioned multidisciplinary team, bringing together environmental health professionals and researchers from UPC University (Universitat Politècnica de Catalunya), specialists in air quality sensors and specialists in mathematical epidemiology. The collaboration of Federal Rural University of Pernambuco (URFPE-Brazil) will also be relevant on different aspects of data analysis, including satellite imagery.

The improvement in indoor air quality will be assessed by installing multi-sensor systems in ten selected houses. A three-month experimental measuring campaign will be carried out, allowing measurements of suspended particles (PM), carbon dioxide concentration and other elements, before and after the installation of the smokeless kitchens. The measurement's analysis will make it possible to quantify the impact on indoor air quality and on the occupant's health, which will be evaluated through health surveys to different families with and without an improved kitchen.

The aim will be to compare CO₂ levels in the same cases before and after the installation of improved kitchens with chimneys. We hope to obtain conclusive data sufficiently reliable to be published in some official report / scientific article, in order to contribute to the awareness of the Government of Nepal and other public agencies.

4. Scientific Research on the thermal behavior of thatched roof houses - PhD Sergio Coll, URV

After some conversations with PhD Architect Sergio Coll from URV University (Universitat Rovira i Virgili), Tarragona, some projects and collaborations with Nepal were discussed, and finally a scientific research was decided to be performed in a house with thatched roof at the rural areas of Nepal, to be compared with two other thatched roof constructions around the world: one in south Catalonia and the other one in Colombia. The task of Awasuka was to install two sensors in the selected house, one indoors and the other one outdoors. The two sensors were left at the house for one week and then they were collected again. Again, the collaboration of Carles Turró as a handyman was gratefully appreciated in this endeavour. The recorded results will be used for a scientific article publication, in which Awasuka

Program Director Monica Sans will be participating as a co-author, along with the research leader PhD Sergio Coll and other collaborators.



Left: The house with thatched roof selected for the thermal behavior experiment, at Mathillo Suping, 1.500m. Right: Carles Turró setting up the outside temperature sensor under the roof's eave.

5. AWARENESS RAISING

BARCELONA

1. Panel discussion at CCD 30th Anniversary, UPC University Campus Nord, Barcelona. (May 18th 2023)
Monica Sans was invited to this University event along with other NGO representatives. CCD (Center for Cooperation and Development) has been supporting cooperation projects within the UPC members for 30 years and Awsauka has been collaborating with them since 2015. The objective was to share what Awsauka Program is doing in Nepal and inspire students and other University members in new ways to create social change. The professor Montserrat Bosch was also present at the event, as well as Monica Alarcon, UPC staff and new Awsauka collaborator, managing the Social Media.

<https://www.upc.edu/ca/sala-de-premsa/noticies/celebracio-dels-30-anys-del-ccd-amb-una-festa-de-la-cooperacio>



Left: Monica Sans and other NGO representatives at the panel discussion. Right: Monica Alarcon, Monica Sans and Montse Bosch standing in front of the Awsauka roll-ups at the Program's stall in the CCD 30th Anniversary event.

2. Exhibit: "The Silent Killer", EPSEB June and September, 2023.

This is the third time Awsauka Program's exhibit (8 roll-ups) is displayed in an education center to raise awareness about the smoke in the kitchens, aka the silent killer. It was exhibited twice: in June and September, at the EPSEB the Technical School where Professor Montserrat Bosch works. The opening presentation was done in September, after a talk given by Monica, Montse and the two students.



Left: Monica Sans cutting the inauguration band at EPSEB School, UPC University, accompanied by Montserrat Bosch, the two UPC students and more EPSEB members. Right: one of the student's presentation prior to the inauguration.

NEPAL

3. Keynote Speaker at the Rotary District 3292 Conference, Kathmandu. (March 18th 2023)

Monica Sans was proposed by Rotary Club of Kantipur to be the Keynote speaker at the Rotary District Conference held in Kathmandu. Her speech on the smokeless kitchens was placed at the Rotary Focus Area of Environment, related to saving CO2 saved emissions, forest areas and trees. Monica spoke just before the Director General of ICIMOD, a public-private agency responsible for environmental studies throughout the Himalayan countries. In his talk, ICIMOD's director mentioned Awasuka several times as an example of a small project with a big impact on the environment. Monica's speech represents a little step forward on the Rotary and Awasuka collaboration, joining hands to *end indoor air pollution in Nepal*. In the following link Monica's speech can be seen from 6:21:47 to 6:38:11 and Monica's song at: 6:37:38): <https://www.facebook.com/ridistrict3292/videos/614435580019274>



Monica Sans at the Rotary District Conference's stage during her speech.

4. Creation of Awareness Material using Maria Ibarz's artwork.

Maria Ibarz, architect and artist, created last year a beautiful artwork to illustrate, in a visual way, the benefits of smokeless kitchens. Her drawings show a Nepali home with two situations: "before" and "after" the CHS. These images have been very useful to create different awareness materials like: the poster for the District Conference, the tickets of the Charity event and the Awasuka office's signboard in Bimphedi. This sensational artwork is becoming the image of Awasuka in Nepal.



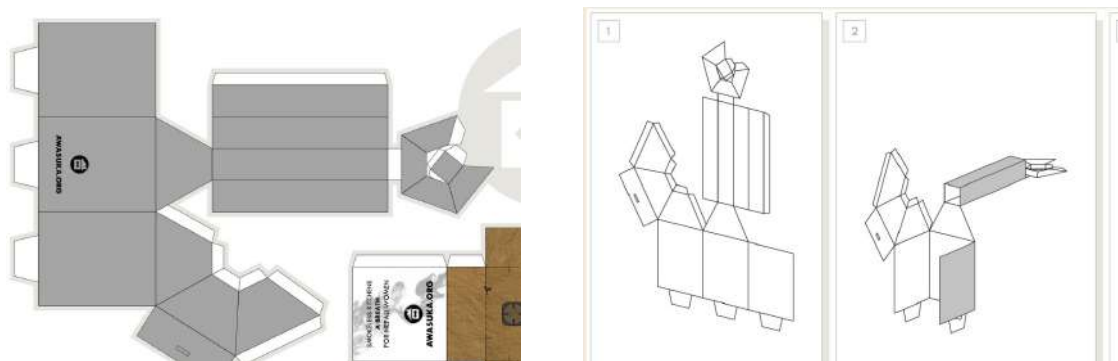
Left: the smokeless kitchens poster for the Awasuka stall at the District Conference. Right: Monica Sans showing the Charity Event tickets. Both graphic materials have been created utilizing Maria Ibarz's artwork.

5. Smokeless Kitchens Awareness sessions in rural areas. Spring 2023.

Awasuka's social mobilizer has covered several remote rural areas, especially two very vulnerable zones with a high degree of underprivileged population. These locations were Bhaise in Bhimphedi Gaupalika and Dhunebesi in Dhading Gaupalika. More than 100 people were trained in Dhunebesi, and for the moment, 50 households have been provided with CSHs. This new area was located thanks to Rotary Club of Himalayan Golfers, and was covered with the funds raised on the Charity Event.

6. Awareness Material: a paper cut-out of a CSH.

Some years ago Monica Sans and Anna Gonzalvo (former Awasuka collaborator) created a paper cut-out of the Awasuka Chimney-Hood-Stoves installed in Nepal. This cut-out has now been made available on Awasuka's website, so anybody willing to know how a CSH looks like in 3D can try to make a paper one. The idea will be that many people print and make this CSH, and then take a picture with it and post it on their social networks.



Left: the paper cut-out of a smokeless kitchen. Right: the cutting, bending and gluing instructions.

7. Musical Awareness against IAP (Indoor Air Pollution). Standby.

Awasuka Program has a long history back on providing awareness through music and songs. **GIZ-Endev** is open to collaborating with innovative awareness-raising campaigns, so they requested us to send them a budget proposal for this initiative. However, this initiative has been held in standby due to many other works. We hope to be able to get over it soon, as the CSH Song is still missing in Awasuka's musical repertoire.

6. HERITAGE PROJECT

1. Introduction (2016 – 2019)

The main idea of the heritage project is to create awareness about Bhimphedi’s traditional architecture and monumental buildings, as well as its historical importance in the past: a commercial hub on the silk roads network. This idea originated in 2016, when Awasuka Program Director witnessed the demolition of a heritage historical building. Immediately after that incident she started contacting different heritage Nepalese organizations to ask for help and, thanks to this, in 2019 she managed to save a building from demolition. Months later, back to Barcelona, she continued her quest and spoke to PhD Montserrat Bosch, UPC Professor specialized in Heritage Conservation, who committed to go to Nepal with her once the pandemic years were over.

2. Heritage Professionals connections (February – March 2023)

In February 2023, Montserrat Bosch finally managed to accompany Monica Sans to Nepal, along with two UPC Bachelor students. The goal of their trip was to document traditional architecture through the Bachelor Theses and creating links between the local government and the international universities. To achieve this, Monica organized several meetings in Kathmandu and Bhimphedi.



Left: the Heritage team at Kathmandu, while attending different meetings. Right: the Heritage team at Bhimphedi with Hareram Pudassaini, Awasuka local Manager, visiting the surroundings of Bhimphedi.

In Kathmandu, Monica took the UPC team to meet different heritage conservation agents she knew from previous years: Dr. Rohit Ranjitkar (Director of KVPT - Kathmandu Valley Preservation Trust), Thomas Schrom (UNESCO’s Nepal Heritage Digital Catalogue), Debendra Bhattarai (DOA – Dept of Archaeology, Gov. of Nepal) and Rabindra Puri (Director of RPF, Rabindra Puri Foundation). The main conclusion in all meetings was the same: some Nepalese agents had to be engaged in the project, so the conservation initiatives would not only depend on international sources. Hence, the DOA suggested contacting the Nepalese architect Jharna Joshi, specialized in heritage conservation and main promoter of the Bandipur Conservation Project. This village is a heritage reference in Nepal, as it was the first rural destination outside of Kathmandu to be successful in tourism promotion through heritage conservation.



Left: Ar. Jharna Joshi giving a lecture about Heritage Conservation in Bandipur and Bhimphedi, at Bhimphedi Gaupalika, in March 10ht. Right: the audience at Bhimphedi Gaupalika, including Mr. Hidam Lama (Chairman) and other vice-chairmen.

Following that advice, Monica talked with Bhimphedi Chairman to promote a meeting with Bandipur key persons - Jharna Joshi and her team. The Mayor agreed to organize an official visit of the Bandipur team to the village on March 10th. Jharna and her collaborators, along with Monica and the UPC team, were all welcomed to the main hall of Bhimphedi Municipality building. The meeting started with the Mayor introducing Monica as a well-known character in the village who always comes back to Nepal to carry out beneficial projects for Bhimphedi. She delivered a speech about Bhimphedi, showing historical photographs of the village that she had collected over the years, during an intermittent research started in 2018. Her presentation was ended with some suggestive images of how Bhimphedi could look after some heritage conservation policies were applied. After Monica's speech it was Jharna's turn, who gave a lecture to highlight Bhimphedi's great potential to becoming a heritage tourist destination. She also talked about how this village had more historical importance than Bandipur itself and how this aspect should be leveraged by the authorities, giving them the most important advice: to ban the vehicles circulation at the Bazar and transform it to a pedestrian area.



Left: image of Chowk Bazaar, one of the old-style beautiful corners of Bhimphedi. Right: The same corner with a heritage conservation intervention by Laura Cabré, a conservation architect collaborating remotely from Switzerland. These and other similar images were shown in Monica's presentation at the Gaupalika, to inspire the local government.

Monica Sans spent the last days of March welcoming more heritage conservation agents in Bhimphedi, like: Thomas Schrom and Claire Burkert. Thomas is an Austrian architect who has worked in conservation projects Nepal for many years, especially collaborating with the well-known Austrian conservation architect Götz Hagmüller. Claire Burkert, Thomas' wife, is a writer and her publications, which focus on indigenous art and architecture, include *Himalayan Style* (Roli, 2014). The objective of Thomas' trip to Bhimphedi was to start working on the inclusion of Bhimphedi heritage buildings in the digital catalogue of Nepal heritage, an initiative supported by the Heidelberg University. The couple was accompanied by James Giambrone, Director of Indigo Gallery, an art gallery in Kathmandu founded in 1981 to foster the traditional arts of Nepal. Finally, the group was joined by some visitors from Rotary Club of Himalayan Golfers: Purna Sakya, Bhairaja Pandey and their wives, who came to Bhimphedi attracted by the history of the village and the smokeless kitchens project.

All the 2023 activities have provided good exposure for Bhimphedi village to Heritage Conservation professionals. Now it is only on Bhimphedi's government and villager's to do something about it.

A special mention goes to Bhupendra Man Pradhan, who always generously lending his Bhimphedi house to Monica and her team, to be able to work on cooperation projects for Bhimphedi.



Left, from left to right: Thomas Schrom (UNESCO), Bhairaja Pandey, Claire Burkert, Sangeeta Sakya, Monica Sans, James Giambrone, Purna Sakya; all at Bhupendra Man Pradhan's house in Bhimphedi. Right, from left to right: Monica Sans, Bhupendra Man Pradhan and Montse Bosch (UPC) in Kathmandu.

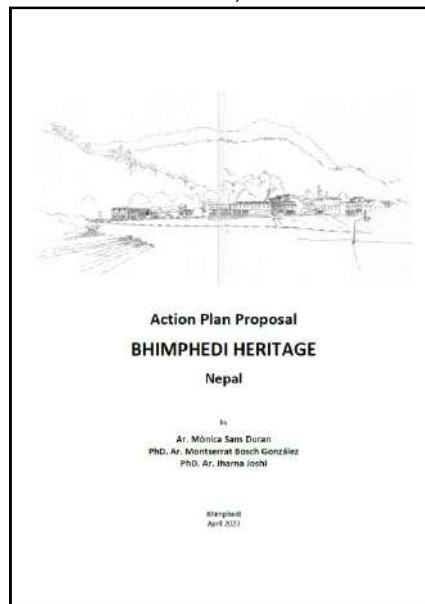
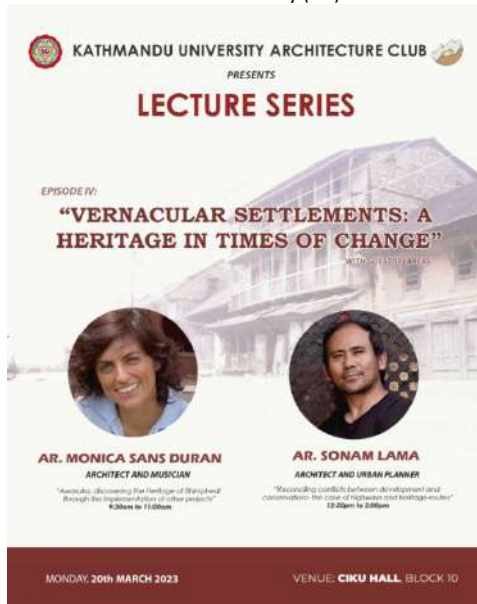
3. Lecture at Kathmandu University Architecture Club, Dhulikhel. (March 20th 2023)

After meeting Jharna Joshi, Monica Sans was invited as a guest speaker to the lecture series “*Vernacular Settlements: A Heritage in Times of Change*” organized by KU Architecture Club. Sonam Lama, a fellow architect, joined the event too. The conference announcement can be seen here: <https://www.facebook.com/photo/?fbid=596535872499843>. Monica’s lecture title was: “*Awassuka, discovering Bhimphedi Heritage through the implementation of other projects*”, in which she went through all the different Bhimphedi projects since 2011, to later reveal that Bhimphedi was a special heritage place itself. The students could capture the program’s resilience, adapting to the local needs, to finally end up embracing a Heritage Awareness Project, with the main idea of documenting Bhimphedi Heritage. At the end of the lecture the video “*Block, Wood or Stone*” was projected, showing that music can contribute to the communication and awareness of architectural knowledge. This is probably the only song in the world that talks about earthquake resistant architecture! ;-)

One of the outcomes of this conference was that a Nepalese architecture student decided to do her Master Thesis on Bhimphedi, in collaboration with Awassuka.



Monica Sans at the Kathmandu University (KU) classroom with fellow architects Sirish Bhatt, Jharna Joshi and Sonam Lama



Left: poster of the lecture given by Monica Sans gave at KU University. Right: cover of the action plan proposal written by the 3 architects: Montse Bosch, Jharna Joshi and Monica Sans, which was handed out to Bhimphedi Municipality.

GENERAL CONCLUSIONS & ACKNOWLEDGEMENTS

Regarding the CHS installation process, the year 2023 has stood out for the consolidation of 2022’s improvements and for the introduction of the location approval step, guaranteeing the successful operation of the CHS. In terms of awareness, several presentations of the project were made at different organizations in Kathmandu and thanks to this, funds have been raised from within the country itself. And as for the heritage project, it has achieved its goal of increasing heritage awareness in Bhimphedi, and also involving four universities in different activities: UPC, KU, KEC and URV.



Awasuka Program thanks profoundly all the individuals and organizations listed below.

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Fundraising by *El Camí de la Solidaritat*: Roger Solà (President & team leader)
CHS Map: Marc Crespo Torres, Geographic Data surveyor
CHS Houses Drawings: Beatriz Cubells, Architect
Social Media: Mònica Alarcón & Maribel Castillo
UPC Scientific Research Team Leader: Ph.D. Daniel López-Codina
UPC Scientific Research Team members: Ph.D. Clara Prats and Mario Bravo (BIOCOMMSC), Ph.D. Jordi Fonollosa (B2SLab), Ph.D. Ferran Campillo (PEHSU), Ph.D. Jones Albuquerque (iLIKA), Ph.D. David Ferrandiz.
IT Advisor & Sensors' installation: Carles Turró, Computer Scientist- Former Athlete
Multi Sensors System Manufacturer: Sens Solutions, Barcelona
UPC Theses Tutors & Co-Tutors: Ph.D. Montse Bosch, Ph.D. Carles Llop, Adrià Alvarez & Monica Sans
UPC Bachelor Thesis on Bhimphedi Heritage: Núria Marce
UPC Bachelor Theses in progress on Bhimphedi: Estefania Magistrado, Zoe Duran, Mireia Vintró

NEPAL

Social Mobilizer & Local Manager: Hareram Pudassaini
CHS Manufacturer & Installer: Sunil & Sujan Gautam, Guru Muktinath Construction
Nepal Funds Management by *Rotary Club Kantipur*: Sarad Bista (President), Dhruba Thapa (Service Project Director), Dilip Adikhari (Treasurer)
Phone Verifications by *Rotaract Club Kantipur*: Pratik Jung Karki (President) Anjal Raj Tiwari, Manika Karki, Om Prakash Sharma, Anusuya Sharma, Mukul Bhattarai, Sadikshya Banjade, Shubhekshya Sharma, Ansh Tamang, Sameer Adhikari
Kathmandu Charity Event Leaders: Purna Sakya & Bhairaja Pandey (Rotary Club of Himalayan Golfers)
Thesis Tutor Professor: Ph.D. Jharna Joshi (Kwopa Engineering College & KU)
Master Thesis on Bhimphedi Heritage: Subina Tuladhar (Kwopa Engineering College)
External Advisor: Min Malla (Practical Action – Kathmandu)
English teacher: Surendra Sapkota, for Hareram Pudassaini

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Monika Hassa | Montserrat Duran | Juanjo Rodríguez | Montse Soler | Rosa Fernández | Núria Marimon | Carles Turró

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Thank you!
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